City of Chula Vista

Sewer Cost-of-Service Rate Study

November 2013

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SECTION I: EXECUTIVE SUMMARY

The City of Chula Vista (City) provides sewer collection services for roughly 250,000 city residents. The collection system consists of roughly 500 miles of pipeline conveying wastewater flows to the San Diego Regional Sewer Authority for treatment and disposal. The City's sewer enterprise fund is self-supporting and funds the operations, maintenance, repair, and rehabilitation and expansion of the system, which consists of a collection system and sewer pump stations, and sewer access maintenance roads. The utility is primarily supported by user fees, which provide a sustainable annual funding source. The objective of this study is to develop a rate plan that generates sufficient revenue to fund the financial obligations of the sewer utility and equitably recover costs from customers.

A. STUDY OVERVIEW

In December of 2011, the City contracted with FCS GROUP to perform a financial forecast and cost-of-service study for its sewer enterprise fund. The study consisted of three main components:

- **Five-Year Financial Plan & Revenue Requirement:** Establishes the annual amount of rate revenue needed to meet the utility's current and projected obligations. The plan was developed with a longer-term planning horizon in order to account for future needs and maintain the fiscal health of the utility.

- **Rate Design:** Reviews the utility's existing rate structure and establishes equitable sewer rates to collect the forecasted revenue needs. The rate design incorporates historical customer data to validate the rate setting process.

- **Financial Model:** A tailored financial model was developed to meet the City's unique needs while providing an effective and useful tool for continued City use. FCS GROUP incorporated unique features into the model based on the needs of the City and City staff.

This report delineates the basis for the proposed five-year financial plan and recommended rates.

B. FINANCIAL PLAN

The five-year financial plan was developed using a robust and dynamic cash flow model that mirrors the utility's accounting and operations. The model utilized multiple financial scenarios to account for potential changes in operating costs – specifically, increases in treatment costs related to the upgrade of City of San Diego's Point Loma Wastewater Treatment Plant (PLWTP). Similarly, multiple capital scenarios were run to view the impacts of longer-term capital costs related to the potential construction of the City's own treatment plant. These scenarios are discussed further in **Section III** of this report.

This study also included an update of the City's Sewer Facilities Replacement (SFR) Fee, which the City imposes on customers to fund long-term capital replacement needs outlined in its Wastewater Asset Management Program (WAMP). The City currently funds infrastructure reinvestment through

its SFR Fee, which is a charge per unit of sewer flow. To provide a metric for benchmarking revenue collection, it is recommended that the City fund long-term asset replacement by collecting a percentage of its annual system depreciation expense through rates. The City currently funds roughly 30% of its annual depreciation expense or $1.8 million. In order to provide increased funding for the active replacement of aging infrastructure, this analysis assumes that replacement funding will increase to 54% of annual system depreciation expense ($4.0 million) by FY 2018/19.

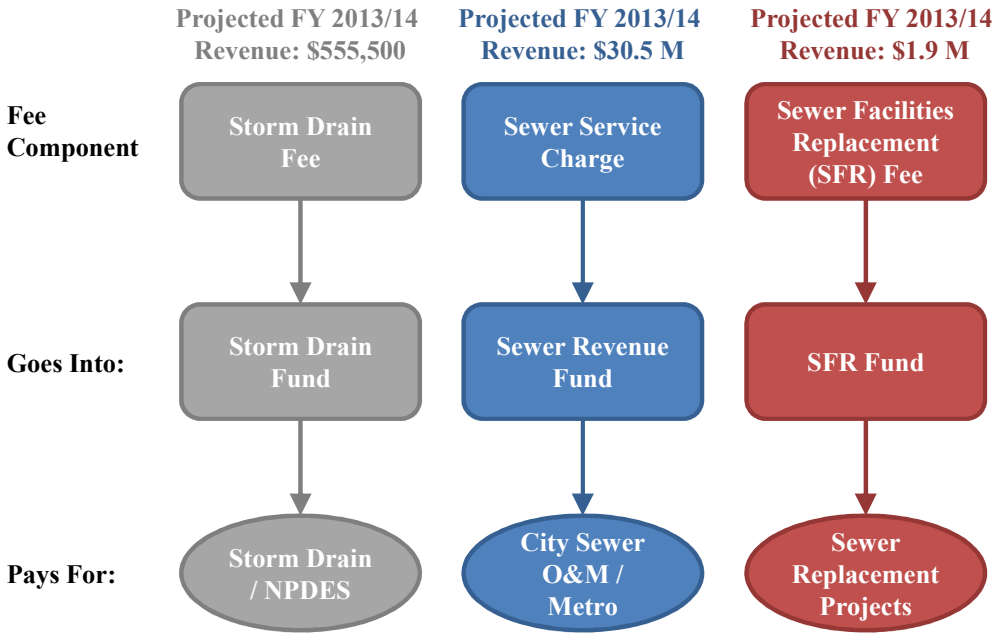
This update included two key elements:

- Evaluating a target funding level and developing a phasing strategy to implement it, given other projected rate revenue needs. The current SFR Fee of $0.18 per hundred cubic feet (hcf) is based on a City policy to fund about 28% of the sewer utility's annual depreciation expense through the SFR Fee; the City expressed interest in increasing the SFR Fee to achieve best management practice objectives and minimize long-term costs.

- Phasing the SFR Fee from a volumetric charge to a fixed rate over a five-year period, to increase the predictability and security of replacement funding.

C. RATE DESIGN

This study also included a review of the City's sewer rate structure in the context of Proposition 218, which requires utilities to set rates that are based on the cost of providing service (as defined by an equitable allocation of utility costs to customer classes based on their service requirements). The diagram shown below illustrates the key components of the existing sewer rate structure:



The City's current rate structure was implemented in FY 2007/08 following a cost-of-service study. The rate structure consists of a fixed and variable component; with the fixed component based on water meter size and variable component on estimated sewer flows. Sewer flows are estimated based on a two-month winter average of water usage for single-family residences, and actual water usage for other customers. The water usage is then adjusted downward to account for consumptive water usage (such as irrigation) that does not enter the sewer system – consistent with the City's Master Fee Schedule, this analysis uses class-specific rates of return to account for differences in usage

patterns across customer classes. These rates of return are generally consistent with industry standards, which suggest that 80 – 90% of water used by customers enters the sewer system. The City's current sewer rate structure is illustrated in **Exhibit 1** below:

Exhibit 1: Existing Sewer Rates [1]

Fixed Charge per Month	Sewer Service Charge
Single-Family	$8.03
All Others:	
5/8" Meter	$8.03
3/4" Meter	$8.03
1" Meter	$13.38
1-1/2" Meter	$26.76
2" Meter	$42.81
3" Meter	$80.28
4" Meter	$133.79
6" Meter	$267.59
8" Meter	$428.14

Volume Charge per Hundred Cubic Feet (hcf)	Sewer Service Charge	Sewer Facilities Replacement (SFR) Fee	Total	Rate of Return [2]
Residential				
Single-Family	$3.39	$0.18	$3.57	90%
Multi-Family	$3.39	$0.18	$3.57	79%
Mobile Homes	$3.39	$0.18	$3.57	84%
Non-Residential				
Commercial – Low	$3.39	$0.18	$3.57	90%
Commercial – Med	$4.70	$0.18	$4.88	90%
Commercial – High	$7.31	$0.18	$7.49	90%
Special Users	Varies	$0.18	Varies	90%

[1] Excludes Storm Drain Fee of $0.70 per month for single-family customers and $0.06 per hcf for other customers.

[2] The assumed percentage of water usage entering the sewer system and subject to volume charges, as published in the City's Master Fee Schedule.

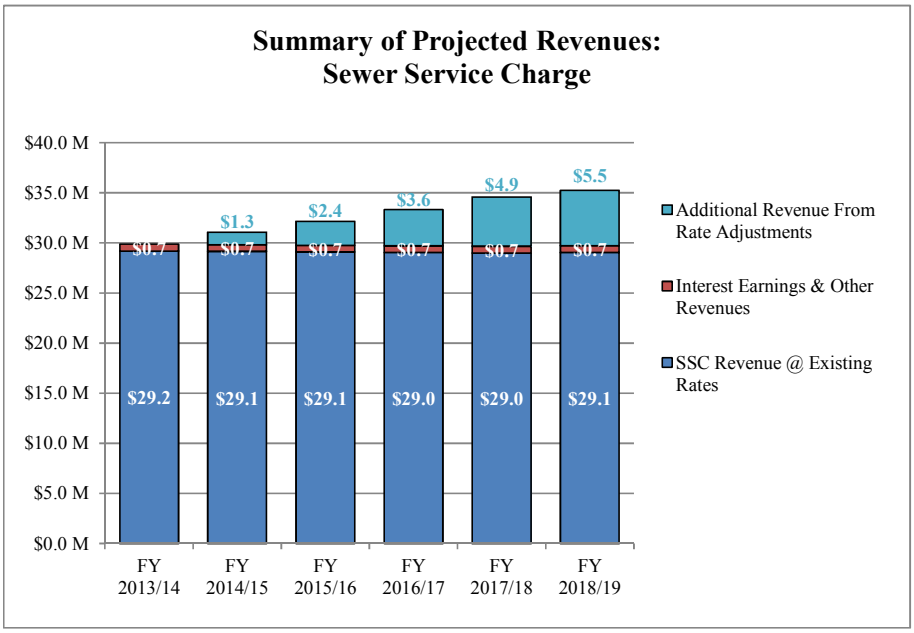
Because the current rate structure adheres to industry-accepted cost-of-service principles and Proposition 218 equity requirements, the City expressed a preference that any rate recommendations remain relatively consistent with it. As a result, FCS GROUP updated the rate structure based on the City's current and forecasted expenditures and developed a detailed cost allocation.

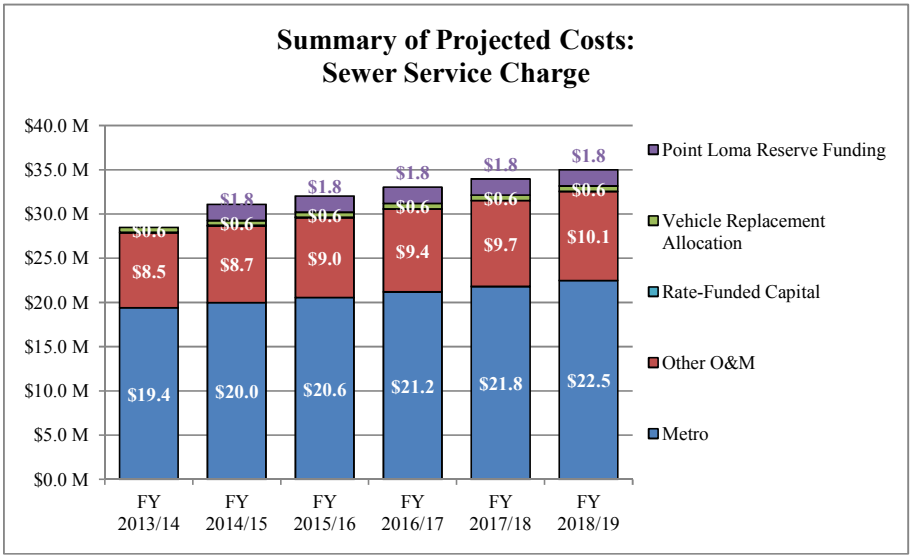
D. PROJECT FINDINGS AND RECOMMENDATIONS

As part of the financial planning process, FCS GROUP provided a set of fiscal policy recommendations for the City that promote equitable cost recovery and sustain the utility's financial health. FCS GROUP developed multiple financial forecast scenarios to evaluate the impacts of various financial and capital planning options, specifically focusing on the impacts of costs that the utility will incur to upgrade its treatment capacity to serve existing customers and future growth. Three distinct financial scenarios were analyzed in conjunction with two alternative capital scenarios.

The revenue requirement analysis, which determines the level of revenue needed to meet the utility's financial obligations, used the City's FY 2013/14 Budget as a baseline for forecasting operating revenues and expenditures. Capital expenditures were based on the City's five-year capital improvement plan which defines planned capital expenditures through FY 2016/17. Based upon the revenue requirement analysis, **Exhibit 2** provides a summary of the revenue requirement forecast for the Sewer Service Charge (excluding both SFR and Storm Drain Fees).

Exhibit 2: Revenue Requirement Forecast – Sewer Service Charge





Sewer Service Charge Revenue Requirement	FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	Cumulative Δ
Annual Adjustment to Sewer Service Charge		*4.30%*	*3.77%*	*3.87%*	*4.07%*	*1.67%*	*18.96%*
Total Revenues	$ 29,863,535	$ 31,065,026	$ 32,156,359	$ 33,313,054	$ 34,590,893	$ 35,249,601	*$ 5,386,066*
Total Expenses	$ 28,498,064	$ 31,105,923	$ 32,050,901	$ 33,027,097	$ 33,975,668	$ 35,015,100	*$ 6,517,036*
Net Cash Flow	**$ 1,365,471**	**$ (40,896)**	**$ 105,457**	**$ 285,956**	**$ 615,226**	**$ 234,502**	
Summary of Sewer Revenue Fund Activity:							
Beginning Balance	$ 21,414,904	$ 22,604,355	$ 22,484,515	$ 21,860,251	$ 22,456,020	$ 23,450,160	
Net Cash Flow	1,365,471	(40,896)	105,457	285,956	615,226	234,502	
Plus: Vehicle Replacement Allocation	556,548	567,679	579,032	590,613	602,425	614,474	
Less: Vehicle Replacement Costs	(732,568)	(646,622)	(1,308,754)	(280,800)	(223,511)	(161,423)	
Ending Balance	$ 22,604,355	$ 22,484,515	$ 21,860,251	$ 22,456,020	$ 23,450,160	$ 24,137,712	
Net Change	$ 1,189,450	$ (119,840)	$ (624,264)	$ 595,769	$ 994,140	$ 687,552	*$ 2,722,808*
Minimum Balance	$ 15,145,331	$ 15,559,304	$ 15,579,035	$ 16,085,943	$ 16,609,680	$ 17,686,081	

It is important to note that without rate increases, operating expenditures will outpace revenues as conservation reduces the amount of rate revenue the City collects. Based on the City's development projections, the analysis assumes annual customer growth of 1.05%; based on our experience regarding declining regional water demands, we have assumed annual reductions in per-capita sewer flows of 1.50% (resulting in an aggregate annual rate revenue reduction of -0.18%).

A major component of the City's operating expenses is the payment to San Diego Metropolitan Wastewater Joint Powers Authority (Metro) for treatment of its sewer flows. This annual expense represents the largest operating expense for the sewer utility at nearly $19.4 million in FY 2013/14 or 70% of total operating expenditures. The study forecast escalates treatment costs by 3.0% annually to account for anticipated Metro rate increases – this analysis assumes inflationary adjustments during the five-year study period, though it is worth noting that Metro's increases may be higher or lower depending on whether or not it can renew its 301 (h) waiver with the United States Environmental Protection Agency (EPA). This forecast does not adjust the City's share of Metro costs for anticipated growth because (a) most of Metro's costs are fixed and do not depend on volume and (b) this analysis assumes that usage patterns are similar across the region and that the City's share of total flows and loadings in the regional system remains constant relative to other participating agencies. Though the City's allocated share of costs has actually increased in recent years relative to other agencies, this analysis assumes that future conservation-related demand reductions will be consistent on a regional level. Given the potential variability of the City's share of treatment costs, exposure to Metro rate increases, and the share of the utility's operating budget, a periodic review of forecasted treatment costs may be warranted as any increase in this expenditure can materially impact the utility's financial health and the need for rate increases. ***The adequacy of the projected rates and revenue increases is directly dependent on actual Metro increases imposed on the sewer utility.***

Fiscal Policies

The revenue requirement also incorporates components of the fiscal policy review. The City's fiscal policies defined four reserves. These reserves defined minimum reserves to be held for operations and sewer system replacement funding. Based on the review of the draft fiscal policies prepared by the City, FCS GROUP recommends the following adjustments to the reserve policies.

- **Sewer Working Capital and Rate Stabilization Reserve:** The City's draft policy targets a minimum reserve of 180 days of working capital. Based on variations in the City's revenue and expenditure cash flow cycles, FCS GROUP recommends splitting the reserve into two components:

  1. A working capital reserve targeted at 90 days of operating expenditures. This reserve intends to protect the City from natural fluctuations in revenue and expense cycles, which is prudent given that the City bills customer bimonthly but incurs expenses continuously throughout the year.

  2. A rate stabilization reserve with a target balance of 90 days of operating expenditures. This reserve intends to provide the City with a greater degree of flexibility to "smooth" rates and phase increases in over multiple years, which is prudent given the potential variability in the City's payments to Metro.

  Combined the two reserves generate a target balance of 180 days which may improve the utility's bond rating. The combined reserve target is equal to $13.8 million in FY 2013/14. The reserve policy target of 180 days may be phased in to reduce impacts to rates.

- **Sewer Emergency Reserve:** The City's draft policy targets 5% of operating expenditures as an emergency reserve to cover "isolated failures [and] insurance deductibles." This target adequately provides reserves for the emergency replacement of critical infrastructure given the City's current system assets. Additionally, it is recommended that the City review this target as its assets continually change. Specifically, if the City were to build its own treatment plant in the future, adjusting the target balance to a percentage of total system assets or the value of the most expensive asset may provide increased protection against system failures. This reserve target is equal to $1.4 million in FY 2013/14.

- **Vehicle Replacement Reserve:** The City's draft policy defines an annual allocation to fund vehicle replacements based on forecast of replacement needs and assumed lifespan of all vehicles. By setting aside a fixed amount, this approach levels the City's vehicle replacement costs and minimizes impacts to ratepayers, especially in years with larger replacement needs. The annual allocation amount for FY 2013/14 is equal to $556,548 as of the writing of this report and is accounted for as a sub-reserve within the Sewer Working Capital and Operating Reserve. Annual replacement needs are debited against annual contributions and the existing Vehicle Replacement Reserve balance. Sewer Working Capital and Operating Reserve balances can be used in the event that replacement needs are greater than the existing balance and annual contributions – amounts used in this way would be repaid with future vehicle replacement allocations.

In addition to the reserves described above, the recommended scenario introduces an "EPA Permit Renewal Liability Reserve" where the City would set aside a fixed amount each year to build up a source of equity funding for the PLWTP upgrade. Based on an assumed 20% cash funding level of the City's share of the upgrade costs, this analysis assumes rate-funded transfers on the order of $1.8 million per year until the upgrade occurs in the mid-to-late 2020s.

The assumed reserve policies are summarized below:

Reserve	Purpose	Minimum Balance	Maximum Balance
Working Capital	▪ Manage differences in revenue and expense cycles	▪ 90 days of operating expenses ($6.9 million in 2014)	▪ 125% of minimum balance ($8.6 million in 2014)
Rate Stabilization	▪ Protect against unforeseen fluctuations in revenues or expenses	▪ 90 days of operating expenses ($6.9 million in 2014)	▪ 125% of minimum balance ($8.6 million in 2014)
Emergency	▪ Provide funding for emergency asset replacement and insurance deductibles	▪ 5% of operating expenses ($1.4 million in 2014)	▪ 125% of minimum balance ($1.7 million in 2014)
Vehicle Replacement	▪ Levelize cost impacts of vehicle replacement needs	▪ Vehicle replacement allocation ($556,548 in 2014)	
EPA Permit Renewal Liability	▪ Accrue funding for PLWTP upgrade (recommended scenario)	▪ Annual transfers of about $1.8 million from 2015 – 2025 (recommended scenario only)	

Billing Policies

The City of Chula Vista does not currently have a policy regarding the billing of vacant homes and back billing of unbilled sewer service. Furthermore, the assumed sewer flow used to calculate bills is reset for customers receiving a name change in the billing system. The proposed policies outlined below are to be used as a starting point for City staff to develop formal policies and procedures. The goal of these recommendations is to promote a more equitable means of charging customers while supporting the fiscal health of the City's sewer utility. The policy recommendations are provided below.

- **Vacant Homes:** Provide a waiver of the monthly commodity charge for vacant residential properties. These adjustments should be limited to vacant homes only; therefore, in the instance a house is no longer vacant the customer must notify the City so the appropriate charges can be reinstated. All fixed monthly charges should continue to be collected.

- **Customer Account Name Change:** Customers changing the name on the account should not have their assumed sewer flows reset. City staff should work with the billing contractor to allow for an override of this automatic reset at the time of the account name change.

- **Back Billing:** The sewer utility should be allowed to collected charges for up to two years of unbilled sewer charges. These amounts should be collected over a reasonable time period, rather than being due in full at the time the billing error is discovered (e.g., two months of unbilled service should be collected over two consecutive months). These unbilled amounts should be in

addition to normal service charges billed to the customer. If the repayment schedule is financially burdensome to a customer, an alternative repayment schedule could be negotiated between the City and said customer.

- **Low-Income Discount:** The City should seek a non-rate revenue funding source for its low-income discount program and have legal review for compliance with Proposition 218. Absent a non-rate revenue funding source, the City must discontinue its low-income discount program.

Revenue Requirement Forecast

This analysis considered three scenarios.[1] Of the three scenarios, it was decided with City staff that the best and most fiscally prudent scenario assumes that the City meets its future capacity requirements by purchasing additional capacity at the Point Loma Wastewater Treatment Plant (PLWTP), resulting in higher Metro-related costs. Additionally, the financial plan follows the current schedule of treatment payments while providing additional funding to offset the City's share of the PLWTP upgrade. Assuming a denial of the 301(h) primary discharge waiver in 2015, the financial plan begins funding a reserve to cash fund 20% or roughly $20 million of the City's nearly $100 million share of the $1 billion cost to upgrade the plant to full secondary treatment.[2] This is done by funding a new EPA Permit Renewal Liability Reserve over a multi-year period, with the goal being to reach the desired cash balance of $20 million by the time the City has to fund its share of the upgrade construction cost. Assuming that the utility begins funding the EPA Permit Renewal Liability Reserve in FY 2014/15 and can accrue cash funding for the upgrade until FY 2024/25, the annual contribution to the EPA Permit Renewal Liability Reserve is about $1.8 million.

Additionally, the City plans to complete its Wastewater Asset Management Program (WAMP) in early 2014. It will fund the system replacement needs defined in the WAMP through the Sewer Facilities Replacement (SFR) Fee, which is a component of the current rate structure (see **Exhibit 1** on Page 4); the targeted funding level is based on a percentage of the system's depreciation expense. The City currently funds roughly $1.8 million or 30% of total depreciation through the SFR Fee; based on discussions with City staff, the analysis contemplates increasing the SFR Fee to fund a higher percentage of depreciation expense over the study period, and assumes that the utility funds about 54% of depreciation expense by FY 2018/19.

The analysis increases replacement funding to $4.0 million over the five-year forecast period beginning with an initial funding level of $1.8 million in FY 2013/14 based on the existing SFR Fee of $0.18 per hcf. Additionally, in order to provide a more reliable source of funding, FCS GROUP recommends that the City transition the SFR Fee from its current volumetric rate to a fixed rate. The SFR Fee is progressively transitioned toward a fixed rate over the five-year forecast period. The fixed SFR Fee is a charge per meter equivalent unit (MEU), increasing with meter size to reflect the increased capacity requirements that larger meters impose on the system. The schedule of the proposed SFR Fee transition strategy and resulting rate increases are displayed in **Exhibit 3** below.

[1] See **Section III** of the report for the alternative scenario descriptions.
[2] Source: Council addendum to 2008 rate study. $1 billion is high end of the forecasted range in 2008 dollars. The exact cost of the treatment upgrade is unknown at this time and is subject to the renewal or expiration of Metro's 301(h) waiver from the EPA.

Exhibit 3: Summary of SFR Reserve Projections

SFR Reserve Projections	FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	Cumulative Δ
Proposed SFR Fee Transition Strategy:							
Total Depreciation Expense	$ 6,358,414	$ 6,549,167	$ 6,745,642	$ 6,948,011	$ 7,156,451	$ 7,371,145	$ 1,012,731
Target Percent of Depreciation Expense Funded	29%	30%	34%	37%	40%	54%	25%
Target SFR Fee Revenue Level (Amount Funded)	$ 1,827,430	$ 1,958,000	$ 2,266,320	$ 2,574,973	$ 2,850,000	$ 3,971,551	$ 2,144,121
Fee Shift (Volume/Fixed)	100% / 0%	72% / 28%	44% / 56%	19% / 81%	0% / 100%	0% / 100%	
Variable SFR Fee per Hundred Cubic Feet (hcf)	**$0.18**	**$0.14**	**$0.10**	**$0.05**	**$0.00**	**$0.00**	**($0.18)**
Fixed SFR Fee per Meter Equivalent Unit (MEU)	**$0.00**	**$0.73**	**$1.67**	**$2.72**	**$3.70**	**$5.10**	**$5.10**
Beginning SFR Reserve Balance	$ 2,799,611	$ 3,005,037	$ 3,035,087	$ 3,065,438	$ 3,096,093	$ 3,327,054	
Plus: Revenues:							
SFR Fee Revenue	$ 1,827,430	$ 1,958,000	$ 2,266,320	$ 2,574,973	$ 2,850,000	$ 3,971,551	$ 2,144,121
Interest Earnings & Other	27,996	30,050	30,351	30,654	30,961	33,271	5,274
Total	$ 1,855,426	$ 1,988,050	$ 2,296,671	$ 2,605,627	$ 2,880,961	$ 4,004,821	$ 2,149,395
Less: Expenses							
Sewer Access Roads	$ (200,000)	$ (208,000)	$ (216,320)	$ (224,973)	$ -	$ -	
WAMP - Manholes	(500,000)	(600,000)	(700,000)	(800,000)	(900,000)	(1,313,985)	
WAMP - Pipes	(500,000)	(600,000)	(700,000)	(800,000)	(900,000)	(1,313,985)	
WAMP - Pump Stations	(300,000)	(400,000)	(500,000)	(600,000)	(700,000)	(1,021,988)	
Transfers to Revenue Fund	(150,000)	(150,000)	(150,000)	(150,000)	(150,000)	(150,000)	
Total	$ (1,650,000)	$ (1,958,000)	$ (2,266,320)	$ (2,574,973)	$ (2,650,000)	$ (3,799,959)	
Projected Ending SFR Reserve Balance	$ 3,005,037	$ 3,035,087	$ 3,065,438	$ 3,096,093	$ 3,327,054	$ 3,531,916	$ 732,305
Net Change	$ 205,426	$ 30,050	$ 30,351	$ 30,654	$ 230,961	$ 204,863	

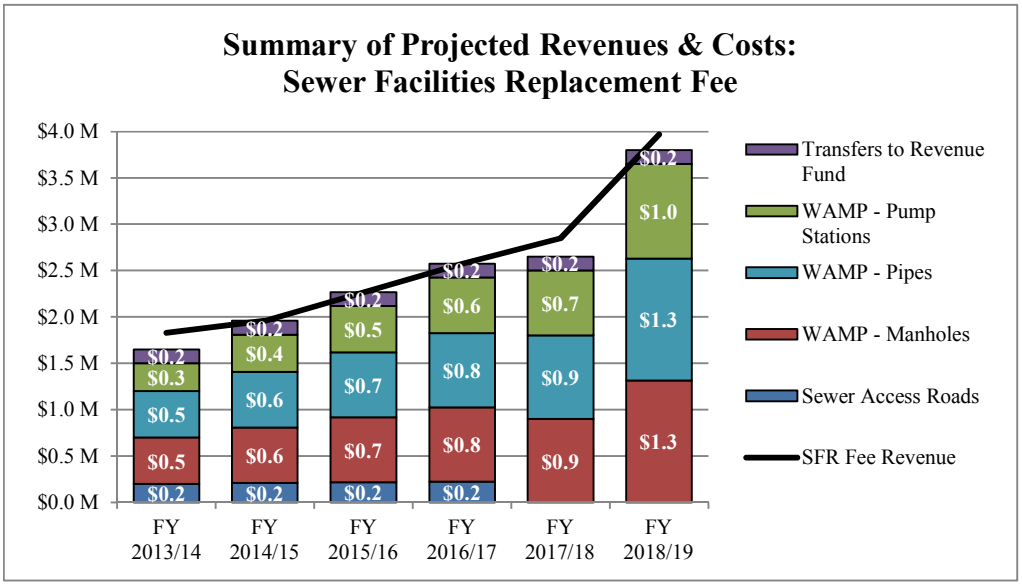


Exhibit 3 shows that by FY 2018/19, the amount of annual SFR Fee revenue is projected to double. It is worth noting that during the study period, the proposed strategy assumes that SFR Fees are set based to cover a reduced set of replacement needs from FY 2013/14 through FY 2017/18 (this analysis originally assumed WAMP-related outlays on the order of $3 million per year in 2013 dollars, adjusted for inflation). Beyond FY 2017/18, the analysis assumes that WAMP-related outlays increase back to the previously assumed level; SFR Fees are increased to cover these incremental costs and generate additional funding for future replacement needs.

The overall "rate increase" is defined by the increases in both the Sewer Service Charge and the SFR Fee. **Exhibit 4** outlines the major findings of the aggregate financial forecast.

Exhibit 4: Five-Year Financial Forecast

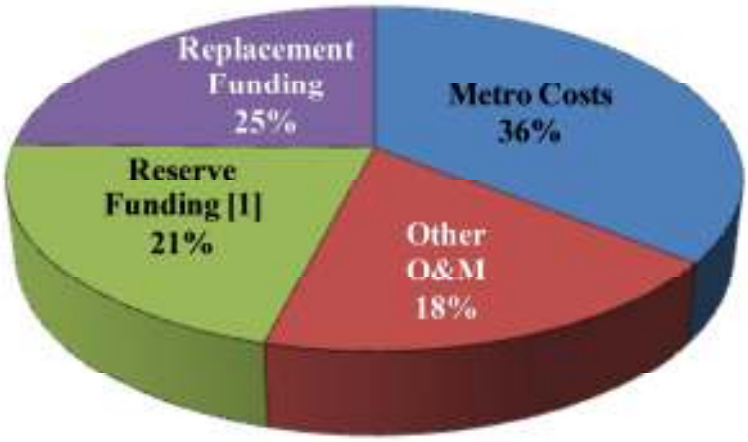
Five-Year Financial Forecast [1]	FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	Cumulative Δ
Rate Revenue Before Rate Adjustments:							
Sewer Service Charges	$ 29,195,886	$ 29,143,238	$ 29,090,685	$ 29,038,227	$ 28,985,863	$ 29,052,467	$ (143,419)
SFR Fees	1,827,430	1,818,919	1,810,447	1,802,015	1,793,622	1,794,330	(33,099)
Total	$ 31,023,316	$ 30,962,157	$ 30,901,132	$ 30,840,241	$ 30,779,485	$ 30,846,798	$ (176,518)
Rate Revenue After Rate Adjustments:							
Sewer Service Charges	$ 29,195,886	$ 30,397,454	$ 31,486,923	$ 32,646,768	$ 33,915,524	$ 34,561,132	$ 5,365,246
SFR Fees	1,827,430	1,958,000	2,266,320	2,574,973	2,850,000	3,971,551	2,144,121
Total	$ 31,023,316	$ 32,355,454	$ 33,753,243	$ 35,221,740	$ 36,765,524	$ 38,532,683	$ 7,509,367
Annual Rate Revenue Adjustment	**0.00%**	**4.50%**	**4.50%**	**4.50%**	**4.50%**	**4.50%**	**24.62%**
Ending Operating Reserve Balance	$ 22,604,355	$ 22,484,515	$ 21,860,251	$ 22,456,020	$ 23,450,160	$ 24,137,712	$ 1,533,357
Targeted Minimum Balance:							
Working Capital Reserve	*$ 6,875,560*	*$ 7,063,492*	*$ 7,050,070*	*$ 7,279,464*	*$ 7,516,474*	*$ 8,028,990*	*$ 1,153,430*
Rate Stabilization Reserve	*6,875,560*	*7,063,492*	*7,050,070*	*7,279,464*	*7,516,474*	*8,028,990*	*1,153,430*
Emergency Reserve	*1,394,211*	*1,432,319*	*1,478,894*	*1,527,014*	*1,576,732*	*1,628,101*	*233,890*
Total	*$ 15,145,331*	*$ 15,559,304*	*$ 15,579,035*	*$ 16,085,943*	*$ 16,609,680*	*$ 17,686,081*	*$ 2,540,750*
Net Available Operating Reserve Balance	$ 7,459,023	$ 6,925,211	$ 6,281,216	$ 6,370,077	$ 6,840,480	$ 6,451,630	$ (1,007,393)
Ending Sewer Facilities Replacement Reserve Balance	$ 3,005,037	$ 3,035,087	$ 3,065,438	$ 3,096,093	$ 3,327,054	$ 3,531,916	$ 526,879
Ending EPA Permit Renewal Liability Reserve Balance	$ -	$ 1,838,610	$ 3,677,220	$ 5,515,830	$ 7,354,439	$ 9,193,049	$ 9,193,049
Total Ending Reserve Balance **[2]**	$ 25,609,392	$ 27,358,212	$ 28,602,909	$ 31,067,942	$ 34,131,653	$ 36,862,677	$ 11,253,286
Vehicle Replacement Allocation	$ 556,548	$ 567,679	$ 579,032	$ 590,613	$ 602,425	$ 614,474	$ 57,926
Ending Vehicle Replacement Reserve Balance **[3]**	$ 686,093	$ 607,149	**$ (122,572)**	$ 187,240	$ 566,154	$ 1,019,205	$ 333,112

[1] Excludes Storm Drain Fee revenues and expenses.

[2] Includes Operating Reserve, SFR Reserve, and EPA Permit Renewal Liability Reserve. Excludes Trunk Sewer Capital Reserve.

[3] Included in the ending Operating Reserve balance.

Breakdown of Revenue/Fee Increase



[1] Funding for the EPA Permit Renewal Liability Reserve

Exhibit 4 provides a breakdown of the key factors driving the revenue increase – given that most costs are funded through the revenue generated from both fixed and variable charges, it would be reasonable to apply this breakdown proportionately to evaluate the proposed fee increases. In the event that rates generate more cash than is needed, the City can use the extra cash for any of these purposes (or other sewer utility purposes). The City could apply the funds toward long-term financing goals for either the Point Loma expansion or general infrastructure replacement needs, or use the funds as a contingency to manage future rate increases.

Cost-of-Service

The cost-of-service analysis builds on the revenue requirement analysis to determine the amount of revenue that is to be collected through Sewer Service Charges (net of Storm Drain and SFR Fees). The analysis consisted of a detailed, line-item allocation of the City's operating costs and non-operating revenue requirement components. Costs were allocated between the following functional categories:

- **Customer:** Fixed costs associated with utility billing and other functions that are equally attributable to all customers, regardless of flows or wastewater strength. This analysis allocates utility billing costs, 50% of other customer service costs, and the vehicle replacement allocation to this category. These costs are allocated between customer classes based on the number of accounts served.

- **Service:** Fixed costs associated with customer service that might reasonably be allocated based on capacity requirements (as defined by meter size). This analysis allocates 50% of customer service costs and General Fund transfers to this category. These costs are allocated between customer classes based on the number of meter equivalent units (MEUs) served.

- **Flow:** Fixed and variable costs associated with providing capacity to convey and treat wastewater flows, regardless of strength. Most other operating costs are allocated to this category, including costs that are specifically attributable to the conveyance system and general operations and maintenance attributable to the system assets as a whole. These costs are allocated between customer classes based on estimated flow (defined as the lowest consecutive two-month average demand for single-family residences, and actual water usage for other customers).

- **Chemical Oxygen Demand (COD):** Fixed and variable costs associated with providing capacity to treat wastewater and remove COD. This category includes chemicals and a portion of other operating expenses attributable to treatment (e.g. payments to Metro for wastewater treatment), and is allocated between customer classes based on estimated COD loadings (as defined by estimated flows and assumed average COD concentrations by class).

- **Total Suspended Solids (TSS):** Fixed and variable costs associated with providing capacity to treat wastewater and remove TSS. This category includes chemicals and a portion of other operating expenses attributable to treatment (e.g. payments to Metro for wastewater treatment), and is allocated between customer classes based on estimated TSS loadings (as defined by estimated flows and assumed average TSS concentrations by class).

By defining the costs allocated to the functional components of the system, unit costs are developed to charge each customer class for the unique demands they place on the system.

Based on the updated functional allocation, costs shifted slightly to the fixed rate components. This shift increases the revenue collected from the fixed meter charge and provides increased revenue

stability. Based on the functional allocation, 18% of costs were allocated to the meter charge and 82% were allocated to the volumetric (variable) charges. Costs were also allocated to each customer class based on their unique characteristics, as exhibited in billing data provided by the City. Customer statistics were forecasted based on FY 2010/11 summary-level customer data provided by the City.

As residential customers (single-family and multi-family) constitute the majority of the City's customer base (roughly 96%) and generate a majority of the demand for sewer services, most of the utility's costs are allocated to these customers. Based on the forecasted FY 2014/15 customer statistics (accounts, MEUs, flows, loadings) and the allocation principles described above for each function of service, single-family and multi-family customers were allocated 62% and 16% of the FY 2014/15 revenue requirement. The remaining 22% is collected from the City's commercial customers.

The proposed rate structure is the culmination of the revenue requirement and cost-of-service analysis and is designed to meet the revenue needs outlined in **Exhibit 4** on Page 7. The proposed rates (combining the Sewer Service Charge and SFR Fee, but excluding the Storm Drain Fee) are displayed below in **Exhibit 5**.

Exhibit 5: Sewer Rate Forecast (Includes Sewer Service Charge and SFR Fee)

Monthly Fixed Service Charge	FY 2013/14 Existing	FY 2014/15 Proposed	FY 2015/16 Proposed	FY 2016/17 Proposed	FY 2017/18 Proposed	FY 2018/19 Proposed
Single-Family	$8.03	**$8.97**	**$10.23**	**$11.62**	**$12.97**	**$14.53**
All Others:						
5/8" Meter	$8.03	**$8.97**	**$10.23**	**$11.62**	**$12.97**	**$14.53**
3/4" Meter	$8.03	**$8.97**	**$10.23**	**$11.62**	**$12.97**	**$14.53**
1" Meter	$13.38	**$15.60**	**$18.48**	**$21.66**	**$24.72**	**$28.49**
1-1/2" Meter	$26.76	**$26.64**	**$32.23**	**$38.41**	**$44.32**	**$51.77**
2" Meter	$42.81	**$39.89**	**$48.72**	**$58.49**	**$67.82**	**$79.68**
3" Meter	$80.28	**$75.23**	**$92.71**	**$112.07**	**$130.52**	**$154.15**
4" Meter	$133.79	**$114.98**	**$142.20**	**$172.34**	**$201.05**	**$237.91**
6" Meter	$267.59	**$225.40**	**$279.67**	**$339.76**	**$396.97**	**$470.61**
8" Meter	$428.14	**$446.24**	**$554.61**	**$674.61**	**$788.83**	**$936.01**

Volume Charge per Hundred Cubic Feet (hcf)	FY 2013/14 Existing	FY 2014/15 Proposed	FY 2015/16 Proposed	FY 2016/17 Proposed	FY 2017/18 Proposed	FY 2018/19 Proposed
Residential						
Single-Family	$3.57	**$3.86**	**$3.97**	**$4.07**	**$4.19**	**$4.26**
Multi-Family	$3.57	**$3.86**	**$3.97**	**$4.07**	**$4.19**	**$4.26**
Mobile Homes	$3.57	**$3.86**	**$3.97**	**$4.07**	**$4.19**	**$4.26**
Non-Residential						
Commercial – Low	$3.57	**$3.86**	**$3.97**	**$4.07**	**$4.19**	**$4.26**
Commercial – Med	$4.88	**$5.40**	**$5.56**	**$5.73**	**$5.92**	**$6.02**
Commercial – High	$7.49	**$8.54**	**$8.82**	**$9.11**	**$9.43**	**$9.59**
Special Users	Varies	**Varies**	**Varies**	**Varies**	**Varies**	**Varies**
Monthly Single-Family Bill @ 10 hcf [1]	***$40.16***	***$43.73***	***$45.96***	***$48.25***	***$50.68***	***$52.87***

[1] Assumes that 90% of usage enters the sewer system and is subject to the sewer volume rate (see **Exhibit 1**)

SECTION II: SYSTEM OVERVIEW

To better understand the basis for the financial forecast and rate design, it is important to highlight the unique features of the City's system, policies, and major operating considerations. The City's sewer system provides sewer collection services for roughly 250,000 city residents. The collection system consists of roughly 500 miles of pipeline conveying discharge to the San Diego Regional Sewer Authority for treatment and disposal. The City's sewer enterprise fund is self-supporting and funds the operations, maintenance, repair, and rehabilitation and expansion of the system, which consists of a collection system, sewer pump stations, and sewer access roads. The utility's user fees generate the majority of revenue for this fund and have provided adequate and sustainable revenues annually. The goal is to develop a rate structure that generates enough rate revenue for the City to meet its various financial obligations and comply with the equity requirements established by Proposition 218.

A. CITY PROFILE

Located 7 miles from downtown San Diego and the Mexican border, Chula Vista is economically and culturally diverse. Recent and rapid growth has grown the City to the 7th largest in Southern California and 14th largest in the California. However, in recent years growth has slowed as the local and national economy contracted. As a popular suburb of San Diego, a majority of the sewer utility's customers are residential. Single-family homes and multi-family dwellings combine for roughly 96% of the utility's customer base; 92% and 4%, respectively. The City has implemented a low-income discount to help support residences; the low-income discount is reviewed and discussed in further detail later in this report.

B. CITY FACILITIES

The City's sewer utility operates a collection system consisting of roughly 480 miles of pipeline and a number of lift stations. The collection system conveys sewer flows to San Diego's Point Loma Wastewater Treatment Plant (PLWTP). The City is billed by the San Diego Metropolitan Wastewater Joint Powers Authority based on the volume and strength of the sewer flows sent to the above treatment plants.[3]

The City's system has historically expanded as needed to serve growth, creating increased operational and maintenance costs. To better manage the City's infrastructure, the City has contracted with the international engineering firm GHD to develop a comprehensive Wastewater Asset Management Program (WAMP) to actively reinvest and manage the sewer infrastructure. The WAMP is expected to be finished in early 2014, and recommends average annual capital investments of $3 million – $5 million.

[3] Metro is a branch of the City of San Diego's Public Utilities Department, which manages both the Point Loma and South Bay treatment plants, among others.

C. SAN DIEGO METROPOLITAN SEWER JOINT POWERS AUTHORITY

As the City does not operate its own treatment plant(s), all sewer discharge is sent to Metro for treatment and disposal. Metro is a coalition of municipalities and special districts that share in the use of the City of San Diego's regional sewer treatment facilities. Metro was established in 1998 to give participating agencies a stronger voice in the operation of the sewer system they use for treatment. Collectively, participating agencies pay for approximately 35% of the system's upkeep and capital costs with usage rates based on the percentage of sewer flows they generate.[4]

301(h) Waiver Implications

The City is the largest contributing member agency of the Metro JPA and is responsible for a large share of operating and capital costs. In FY 2013/14, the City is expected to account for $19.4 million or 10% of total Metro costs.[5] Given the reliance on Metro for treatment, the City is susceptible to large shifts in Metro's costs. For example, the PLWTP operates under a waiver from the U.S. Environmental Protection Agency (EPA) that is set to expire in 2015. Subject to renewal of this waiver, Point Loma's primary treatment may need upgrading to secondary treatment, a higher level of treatment required to meet more stringent environmental regulations governing treated wastewater effluent. In order to maximize the likelihood of the waiver being renewed, Metro and member agencies are proposing the expansion of a recycled water network that would reuse a larger portion of treated wastewater flows and, therefore, reduce the amount discharged into the ocean.

If the waiver is not renewed in 2015, Metro and JPA members would be faced with large capital obligations within 10 years of the waiver's expiration. As the largest member agency, the City would be responsible for a large share of the plant's upgrade costs. Current estimates place the cost of upgrading to secondary treatment at $1 billion with Chula Vista's share being $97 million, or 9.7% of the total cost.[6] As noted, an alternative to upgrading to secondary treatment is expanding the region's recycled water network.

Additional Capacity Purchases

Additionally, in order to meet future growth the City will need to purchase additional capacity at the PLTWP in the future. Previous studies reviewing the City's current Metro treatment capacity and the need to purchase additional capacity assumed a capacity deficit beginning in FY 2014/15; however this capacity deficit projection is based on assumed sewer flows of 20.8 MGD in FY 2009/10. These assumed flows exceed current flows by roughly 4.6 MGD based on FY 2009/10 flows of 16.2 MGD, as reported by City engineering staff.[7]

Adjusting the capacity forecast to reflect current sewer flows, the City would face a treatment capacity deficit of roughly 1 MGD in FY 2024/25. Table 1 of Metro's 2008 Capacity Valuation Report establishes a 2007 value of $14.38 per gallon per day (gpd) of sewer flow for this additional capacity. Escalating the assumed capacity unit cost to account for increases due to inflationary

[4] Metro's website: http://www.metrojpa.org/snd-page/about.html.
[5] Estimates based Metro's draft FY 2011/12 cost allocation. Chula Vista's payments are roughly 29% of all costs allocated to participating agencies (agencies other than the City of San Diego).
[6] Based on cost estimates provided in Council addendum to the 2008 rate study.
[7] 16.2 MGD sourced from "FY 09-10 CV SEWER FLOW.xlsx" file provided by City engineering staff.

pressures, the total cost of the additional capacity would be roughly $32.8 million in FY 2024/25. It is important to note that this forecast is subject to change if realized growth varies from assumed growth rates. This additional capacity cost is included as a long-term capital expenditure that would be paid for using the funds collected pursuant to the City's Sewer Capacity Fee Program and deposited in the City's Trunk Sewer Capacity Reserve Fund. This fee program was not included in the current rate study and no analysis of the sufficiency of the fee program to meet needs through buildout has been conducted by FCS GROUP.

D. RECYCLED WATER

The proposed recycled water network is intended to be an alternative to a costly upgrade to the PLWTP. Additionally, an expanded recycled water network has auxiliary benefits. An expanded system will minimize impacts to potable water supplies by reducing consumption currently used for irrigation. For example, golf courses within the San Diego region currently utilize recycled water for irrigation.

A major consideration for the expansion of the recycled water network is the cost comparison with a PLWTP upgrade. Given the construction and operating costs involved with expanding the reclaimed water system, it would only be economically feasible if the offsetting benefits (increased revenues and/or cost savings) are sufficient to reduce the net cost below that of the PLWTP upgrade. As such, the scale of the network expansion is limited by cost; the timing depends on the renewal or expiration of the EPA waiver.

It should be noted that if, in the future, the City constructed its own treatment plant that provided recycled water, an increased recycled water system could benefit the City by providing a larger recycled water service area.

SECTION III: FINANCIAL PLAN

Once guidelines for establishing financial policies have been defined, the next step in the rate study process is to determine the "rate revenue requirement," or the amount of revenue that rates must generate in order to meet the utility's financial obligations. This analysis has two main purposes – it serves as a means of evaluating the utility's fiscal health and adequacy of current rate levels, and it sets the basis for near- and long-term rate planning.

As part of this study, multiple rate revenue forecasts were developed to analyze the impacts of potential changes in operations and capital investments including potential large-scale capital projects related to Metro and a proposed City-owned treatment plant. Given the utility's existing financial position – current fund balances, the need to comply with the City's fiscal policies, and the need to fund capital projects – the revenue requirement analysis projects rate revenue increases over the next five years. The magnitude of these increases is contingent on the level of capital expenditures required and the funding mechanism employed to meet these costs. Generally, three scenarios were evaluated:

- **Scenario I – Baseline:** This scenario assumes operations continue at present levels. It is assumed that this scenario is not viable under a longer-term horizon but will adequately fund short-term needs.
- **Scenario II – Point Loma Upgrade:** This scenario develops a financial plan in which the PLWTP is upgraded to secondary treatment following the expiration of the EPA 301(h) waiver.
- **Scenario III – Membrane Bioreactor (MBR) Plant Construction:** This scenario develops a financial plan that will adequately fund the construction of a City-owned treatment plant designed to reduce reliance on Metro.

Recommendation Overview

Given the above revenue requirement scenarios, we recommend the City implement **Scenario II** to supplement current City planning related to potential Metro cost increases and capital requirements. In addition to providing funding for normal operations, this scenario builds up a dedicated reserve to offset the costs of the expected Point Loma upgrade. By building up the reserve now the City can minimize rate spikes later when the uncertain costs are realized. It is recommended that the City allow the reserve be used in times of emergency prior to the Point Loma upgrade. To be consistent with the City's draft reserve policies as they pertain to managing cash balances for the other reserves, if funds are appropriated from the reserve, the funds should be replenished in subsequent fiscal years. If the magnitude of the withdrawal is material, the City should develop a plan to incrementally replenish the reserves to its previous or scheduled level.[8]

The following table provides a summary of projected rate increases and major components of the revenue requirement for the recommended scenario.

[8] This approach is consistent with the City's draft reserve policies provided to FCS GROUP.

Exhibit 6: Rate Revenue Requirement Summary (Recommended Scenario)

Five-Year Financial Forecast [1] Scenario: Point Loma Upgrade	FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	Cumulative Δ
Projected Operating Costs:							
Metro	$ 19,383,028	$ 19,964,519	$ 20,563,455	$ 21,180,359	$ 21,815,769	$ 22,470,242	$ 3,087,214
Other	8,501,188	8,681,867	9,014,426	9,359,923	9,718,863	10,091,774	1,590,586
Total	$ 27,884,216	$ 28,646,386	$ 29,577,881	$ 30,540,282	$ 31,534,633	$ 32,562,016	$ 4,677,800
Projected Capital Costs							
Operating Reserve	$ 57,300	$ 53,248	$ 55,378	$ 57,593	$ -	$ -	
SFR Reserve	1,500,000	1,808,000	2,116,320	2,424,973	2,500,000	3,649,959	
Other Funds	916,300	520,000	324,480	-	-	-	
Total	$ 2,473,600	$ 2,381,248	$ 2,496,178	$ 2,482,566	$ 2,500,000	$ 3,649,959	
Aggregate Rate Revenue Adjustment	***0.0%***	***4.5%***	***4.5%***	***4.5%***	***4.5%***	***4.5%***	***24.6%***
Monthly Single-Family Bill @ 10 hcf [2]	***$40.16***	***$43.73***	***$45.96***	***$48.25***	***$50.68***	***$52.87***	***$12.71***
Projected Rate Revenue After Rate Adjustments:							
Sewer Service Charges	$ 29,195,886	$ 30,397,454	$ 31,486,923	$ 32,646,768	$ 33,915,524	$ 34,561,132	$ 5,365,246
SFR Fees	$ 1,827,430	$ 1,958,000	$ 2,266,320	$ 2,574,973	$ 2,850,000	$ 3,971,551	2,144,121
Total	$ 31,023,316	$ 32,355,454	$ 33,753,243	$ 35,221,740	$ 36,765,524	$ 38,532,683	$ 7,509,367
Ending Operating Reserve Balance **[3]**	$ 22,604,355	$ 22,484,515	$ 21,860,251	$ 22,456,020	$ 23,450,160	$ 24,137,712	$ 1,533,357
Targeted Minimum Balance:							
Working Capital Reserve	*$ 6,875,560*	*$ 7,063,492*	*$ 7,050,070*	*$ 7,279,464*	*$ 7,516,474*	*$ 8,028,990*	*$ 1,153,430*
Rate Stabilization Reserve	*6,875,560*	*7,063,492*	*7,050,070*	*7,279,464*	*7,516,474*	*8,028,990*	*1,153,430*
Emergency Reserve	*1,394,211*	*1,432,319*	*1,478,894*	*1,527,014*	*1,576,732*	*1,628,101*	*233,890*
Total	*$ 15,145,331*	*$ 15,559,304*	*$ 15,579,035*	*$ 16,085,943*	*$ 16,609,680*	*$ 17,686,081*	*$ 2,540,750*
Net Available Operating Reserve Balance	$ 7,459,023	$ 6,925,211	$ 6,281,216	$ 6,370,077	$ 6,840,480	$ 6,451,630	$ (1,007,393)
Ending Sewer Facilities Replacement Reserve Balance	$ 3,005,037	$ 3,035,087	$ 3,065,438	$ 3,096,093	$ 3,327,054	$ 3,531,916	$ 526,879
Ending EPA Permit Renewal Liability Reserve Balance	$ -	$ 1,838,610	$ 3,677,220	$ 5,515,830	$ 7,354,439	$ 9,193,049	$ 9,193,049
Total Ending Reserve Balance **[4]**	$ 25,609,392	$ 27,358,212	$ 28,602,909	$ 31,067,942	$ 34,131,653	$ 36,862,677	$ 11,253,286
Vehicle Replacement Allocation	$ 556,548	$ 567,679	$ 579,032	$ 590,613	$ 602,425	$ 614,474	$ 57,926
Ending Vehicle Replacement Reserve Balance **[5]**	$ 686,093	$ 607,149	**$ (122,572)**	$ 187,240	$ 566,154	$ 1,019,205	$ 333,112

[1] Excludes Storm Drain Fee revenues and expenses.

[2] Assumes that 90% of usage enters the sewer system and is subject to the sewer volume rate (see **Exhibit 1**)

[3] Ending Operating Reserve balance reflects funding of vehicle replacements net of the annual vehicle replacement allocation.

[4] Includes Operating Reserve and SFR Reserve. Excludes Trunk Sewer Capital Reserve.

[5] Included in the ending Operating Reserve balance.

The following sections provide a detailed discussion on the revenues and cost drivers, as well as additional detail for the revenue requirement scenarios evaluated.

A. METHODOLOGY

The rate revenue requirement is defined as the net difference between total revenue needs (or expenditures) and the revenue generated through non-rate sources. Additionally, under Scenarios II & III, it is expected the City will need to issue debt in order to meet its capital needs. As such, the debt coverage sufficiency analysis becomes an integral component of the revenue requirement in the out-years of the analysis. However, it is important to note that no debt issuance is expected within the five-year financial plan's time horizon. Regardless, for clarity and completeness, the revenue requirement analysis involves defining and forecasting both needs and resources within the context of both a cash flow test and a debt coverage sufficiency test.

A.1 Overview

A revenue requirement analysis includes a comparison of the City's needs and resources to determine the necessary rate revenue requirement. The following sufficiency tests were used to determine the level of annual rate revenue needed for the sewer utility:

- ***Cash Flow Sufficiency Test*** – Utility revenues must be sufficient to cover annual operating expenses and other cash obligations, including reserve funding, debt service, and a share of system reinvestment funding.

- ***Debt Coverage Sufficiency Test*** – Currently the City's sewer utility has zero debt liabilities; this is assumed to remain unchanged for the entire five-year financial plan. However, coverage considerations become important if the City were to issue debt to either fund a share of the PLWTP upgrade, expanded recycled water system, or construction of a City-owned treatment plant. As the City does not have outstanding debt with bond covenant defined coverage requirements, the revenue requirement analysis uses a typical industry coverage ratio of 1.25. Specifically, net revenues must, at minimum, be sufficient to generate a coverage ratio of 1.25 (eligible revenues less operating expenses must be equal to at least 125% of annual debt service).

The utility must satisfy both tests, each of which provides a different perspective on how much revenue is appropriate. Moreover, the revenue requirement combines both test results in an overlapping fashion so that, in tandem, each separate objective is met at all times. For example, maintaining a coverage ratio of 1.25 times annual debt service may generate positive cash flow, concurrently satisfying both cash flow sufficiency and debt coverage sufficiency tests. Similarly, the cash requirements for capital investment may assure adequate coverage. Therefore, annually satisfying both the cash flow and bond coverage test will reduce financial risk and increase financial stability, helping to sustain a long-term strategy of stable and moderate sewer rates.

Financial Considerations

Although the financial forecast focuses on revenue needs from Sewer Service Charges and SFR Fees, this analysis also considers projected capital costs and resources in the Trunk Sewer Capital Reserve. Though it is a separate reserve, expenses from the Trunk Sewer Capital Reserve could potentially impact rates if resources are lower or expenses are higher than expected. In particular, Sewer Capacity Charges can be used either for direct capital investment or repayment of debt service – if annual Capacity Charge revenues remain low for an extended period of time, there is a possibility that rates may have to fund debt service costs that it would not otherwise have to. Similarly, City staff might consider loans from the Operating Reserve to the Trunk Sewer Capital Reserve to avoid or delay debt issuance. Debt issuance is not projected to occur during the study period, but it will likely be needed to fund the PLWTP upgrade when it occurs.

Though debt service is not expected to be an issue during the study period, it is worth noting that annual Sewer Capacity Charge revenues continue to fall below projections due to the current housing and construction market conditions. As a matter of prudent fiscal planning, the analysis assumes an annual development growth rate of 1.05%, which would generate roughly $1.8 million in revenues. In doing so, the City reduces its exposure to revenue shortfalls due to downturns in the housing market.

Policy Considerations

In addition to being a criterion for complying with debt requirements, the coverage ratio realized is an important statistic used to rate a utility's financial integrity and ability to meet its debt obligations,

allowing for lower borrowing costs. Additionally, revenue generated from a higher coverage ratio may be used for capital purposes, and may reduce the amount of revenue needed to meet cash needs in subsequent years. This is especially beneficial given the City's exposure to large capital costs related to Metro.

A.2 Billing Considerations

The City does not directly bill all of the sewer utility's customers. The City shares billing responsibilities with Sweetwater Authority (Sweetwater) and Otay Water District (Otay WD) with each using separate billing methodologies. For example, Sweetwater bills bimonthly while Otay WD bills monthly. Furthermore, a portion of the City's customers are billed on an annual basis as part of the customer's property tax roll while others are billed bimonthly.[9] The variation in billing frequencies has placed a unique strain on the sewer utility's revenue collection. Additionally, each billing frequency has its own advantages and disadvantages. These are discussed below:

- **Monthly & Bimonthly Billing** – Monthly and bimonthly billing allows customers to pay for sewer service multiple times during the course of a year and effectively charges customers as they receive the service. Additionally, bimonthly bills allow customers to pay in smaller increments and limit any potential financial strain. However, as more bills are sent out (monthly billing requires 12 bills per customer – roughly 575,000 bills if all sewer customers were billed monthly at a cost of $250,000), there is a potential increase in the number of errors within said bills.[10] Similarly, increasing the number of bills also increases the total cost of billing sewer customers. While this cost may be relatively minor relative to other large expenditures (treatment costs), there is potential to reduce costs by sending bills to customers less frequently.

- **Annual Tax Roll** – By charging customers for sewer service on their annual property tax roll, the utility would be able to avoid certain costs associated with bimonthly billings (e.g. postage). However, a drawback of annual or semi-annual billing is that there is less flexibility with respect to the timing of rate increases (rate increases must be implemented prior to the billing period in order to collect the additional revenue from the rate increase).

As a majority of the City's customers are billed through Otay WD (roughly 63%), it is potentially beneficial to move all customers to a monthly billing cycle to match Otay WD's billing cycle. However, given the sewer utility's cost structure (mostly fixed costs) it would be financially beneficial to collect all sewer revenue annually through the property tax roll. Additionally, the increased revenue security may minimize any future rate increases as the City will be able to forecast with more accuracy the timing and collection of sewer revenues.

A.3 Billing Policies

During the course of the sewer cost of service study process City staff raised concerns over specific billing issues. City staff requested that FCS GROUP develop a set of policy recommendations to be used as a starting point for formal policies. The issues addressed as part of the City's request are discussed below.

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[9] Chula Vista Finance Department, Sewer Bill Payments: http://www.chulavistaca.gov/city_services/administrative_services/finance/treasury/Payments/sewer.asp

[10] Example only assumes standard postage of $0.45 per bill and no administrative overhead. It is important to note that total cost of billing would, most likely, include a percentage of administrative overhead.

- **Vacant Homes:** The City currently charges vacant residential properties for sewer service. The City has asked FCS GROUP to provide a policy recommendation regarding the appropriateness of billing vacant properties.

- **Account Name Change:** The City's sewer service charge includes a volumetric component, which is based on each customer's prior year water usage. When a new single-family account is opened, the account automatically resets to the median assumed single-family sewer usage of 9 HCF (10 HCF of water consumption multiplied by a 90% return-to-sewer factor). In addition to customers opening new accounts, a number of customers request an account name change. The current billing process and systems treat name changes commensurate to a new account, automatically resetting the assumed usage to 9 HCF regardless of the customer's historic usage pattern. The City has asked FCS GROUP to provide policy and operational recommendations for customer requesting an account name change.

- **Back Billing:** The City does not have a policy enabling staff to retroactively bill customers for unbilled past sewer services – the process of billing for past services is called "back billing." The City has asked FCS GROUP to provide a policy recommendation regarding back billing.

- **Low-Income Discount:** The City currently provides a 30% discount to low-income single-family customers. Due to the California Supreme Court's 2006 ruling in *Bighorn-Desert View Water Agency v. Beringson* (confirming that sewer rates were subject to Proposition 218), the City has requested that FCS GROUP review its low-income discount program.

A.3.1 Vacant Homes

The City's proposed sewer service charges consist of fixed charges (base charge and sewer facilities replacement charge), which vary by meter size, as well as a variable commodity charge based on assumed sewer flows. The fixed charge varies by meter size, while the variable charges vary by customer class. For residential customers, the variable charge is calculated based on a two-month winter average of the previous year's water consumption. Unless a home has been vacant for at least one annual billing cycle, the customer will be billed for both the fixed and variable components of the monthly fee. The City is requesting a policy recommendation regarding the billing of vacant homes.

A majority of the City's sewer costs are fixed and will not vary significantly due to short-term reductions in residential sewer discharges. Moreover, when a new home or development physically connects to the City's sewer system and pays the initial sewer capacity charge, that user is effectively reserving capacity within the sewer collection/conveyance system and regional treatment facility. The fixed monthly meter charge is designed to recover fixed costs associated with this reserved capacity – those costs related to serving a customer regardless of sewer discharge. As such, if a customer meets the definition of a "vacant home," waiving the commodity charge to reflect zero sewage discharge is a reasonable accommodation and better reflects the cost burdens that a vacant home places on the system. The fixed monthly charges should continue to be billed.

As the City does not directly bill for water usage and is not able to directly monitor sewer discharges from its single-family residential customers, it should be the owner's responsibility to contact City billing staff to request an adjustment to the sewer bill for zero usage in the event that a home becomes vacant. The City should develop criteria for designating a property as vacant, such as requiring a customer to provide water bills for the preceding two consecutive months showing zero water consumption. The City should also require the property owner to re-apply for the vacancy program annually; otherwise the bill should automatically be reset at the single-family average usage level of 9 hcf. Additionally, it should be the owner's responsibility to notify City staff if a given property is no longer vacant. The City should back bill for the period in which the residence was

inhabited, but receiving a bill as a vacant property. A penalty charge could also be applied. A penalty charge will help deter users from abusing the policy and protect the City against undue revenue loss.

Finally, in circumstances that a building structure will be permanently removed, the owner should be permitted to apply for a full sewer fee waiver.

Policy Recommendation

Vacant residences should be adjusted to assume zero usage and be charged only the fixed charges for the duration that the house remains vacant. It should be the customer's responsibility to inform the City when the residence becomes vacant and, conversely, is re-inhabited. If the customer does not inform the City, the customer will be back billed for any duration the house was inhabited but being charged as a vacant residence (see back billing section for additional information).

A.3.2 Account Name Change

City sewer customers periodically request name changes to their account. The City's sewer service charge includes a volumetric component, which is based on each customer's prior year water usage. When a new single-family account is opened, the account automatically resets to the median assumed single-family sewer usage of 9 hcf (10 hcf of water consumption multiplied by a 90% return-to-sewer factor). The current billing process and systems treat name changes as effectively setting up a new account, automatically resetting the assumed usage to 9 hcf regardless of the customer's historic usage patterns.

Name changes do not reflect changes in actual customer characteristics. It is recommended that the City's billing system be adjusted to allow for an override of the automatic reset in customer usage. This reset override would allow the customer bills to remain the same while the customer account name is being changed. This will allow the billing system to remain accurate while administrative changes are being made.

Policy Recommendation

The City's billing process should allow staff to adjust an account name, without resetting that customer's usage history. A possible example of this is a check box that when checked does not allow the assumed usage value to be reset. The possibility of this feature will need to be confirmed with the City's billing contractor and IT department.

A.3.3 Back Billing

The City currently has no formal policy for the collection of sewer charges from customers that have not been billed for sewer service due to a billing error or oversight. The process of collecting the unbilled sewer charges is called back billing. It is important to note that the unbilled sewer charges should not be viewed as overdue, unless intentionally fraudulent; that is, the fault should not be placed on the customer for not receiving the bill(s) and therefore not paying the bill(s).

It is recommended that the City allow billing staff to bill for all services not previously billed in the past based on the following guidelines:

- **Time Frame:** Absent fraudulent actions on the part of the customer, back billing should be limited to two years. Placing a time limit will: (1) place the burden on the City to properly bill customers for sewer collection service; and (2) mitigate the financial impact on customers for something that they cannot control.

- **Collection Procedure:** Because the amount owed due to back billing can be substantial, a defined repayment schedule should be used to collect the amount due. A collection schedule should be easy for staff to manage and implement while mitigating the financial burden imposed on the customer. To meet these concerns, the City might wish to consider establishing a repayment schedule that accounts for the duration of the missed billings. For example, if the customer is being back billed for 6 months of unbilled services, the repayment schedule should be 6 months. Under this process, back billed customers would receive the equivalent of two bills (past due amount and current amount) until the unbilled amount has been paid. It is important that the City allow exceptions to this rule where appropriate; for example, if the repayment schedule is financially burdensome, an alternative schedule should be developed. Lastly, if a customer wishes to close the account with a balance of back billed charges, these charges should be collected as part of the last payment.

Policy Recommendation

The City should collect unpaid sewer charges through a process of back billing. Back billing should be limited to two years and collect the unpaid amounts over a reasonable period of time. Where appropriate, special repayment schedules could be negotiated if the standard repayment schedule is financially burdensome to the customer.

A.3.4 Low-Income Discount

The City strives to provide affordable sewer service to its constituents. The City currently offers rate assistance to low-income single-family customers. These customers pay 70% (30% discount) of the normal single-family fixed and volumetric rates. As of February 2012, there are currently 361 single-family customers receiving a reduced rate. This represents roughly 0.8% of total single-family accounts and a loss of roughly $40,000 in annual rate revenue.

The City's sewer rates are subject to the Proposition 218. Effective July 1, 1997, Proposition 218 subjects all new property taxes and most charges on property owners to voter approval. Water, wastewater and refuse (solid waste) services were granted a partial exemption from the election requirements in Proposition 218. On July 26, 2006, the California Supreme Court issued a decision in *Bighorn-Desert View Water Agency v. Beringson*, confirming that Proposition 218 does apply to fees based on measured consumption (i.e., water, sewer, and refuse rates). The ruling clearly stated that charges "for water delivery...are charges for property-related services, whether the charge is calculated on the basis of consumption or is imposed as a fixed monthly fee." This ruling confirmed that local governments must comply with the notice and majority protest proceeding and proportionality requirements of Proposition 218.

In addition, revenues from water, sewer and government refuse service charges must adhere to the following:

- Rates are not to exceed the cost of providing the service (Article 13, Section 6(2)(b)(1).
- Rate proceeds must be used only to provide the service (Article 13, Section 6(2)(b)(2).
- Rates imposed must "not exceed the proportional cost of the service attributable to the parcel (Article 13, Section 6(2)(b)(3).

The City's low-income discount does not have a cost basis. Rather, the discount is strictly based on economic status. A strict interpretation of the proportionality requirement of Proposition 218 limits the City's ability to use rate revenue to fund its low-income discount program – albeit a very small dollar amount, each customer not receiving a discount pays more than their proportionate share of costs to fund $40,000 in annual discounts.

According to our research, there has not yet been a judicial determination as to whether the "proportionality" requirement of Proposition 218 precludes funding low-income programs by charging other ratepayers. Interpretations of this issue has been provided by others (i.e., Legislative Analyst's Office December 1996 guide entitled "Understanding Proposition 218;" Michael Colantuono of Colantuono & Levin, P.C., March 27, 2005 article entitled "Fresno Court of Appeal Rules Water, Sewer and Trash Fees Subject to Proposition 218;" and the County of Sacramento's Consolidated Utilities Billing and Service website "Frequently Asked Questions" and "Utility Rate Questions"). In light of the *Bighorn* case, many agencies discontinued their low-income discount program. Other communities continue to provide low-income assistance programs using non-user rate revenues, such as taxes and other City general fund sources.

Policy Recommendation

Given that the City has not been able to identify a reliable source of non-rate revenue to fund its low-income discount program, we recommend that the City discontinue its low-income discount program to comply with the requirements set by Proposition 218.

A.4 Expenditures

As described above, the difference between a utility's needs (expenses) and available resources (revenues) serve as the basis for a revenue requirement analysis. The following section discusses the revenue needs of the City. These needs can be categorized as operating, capital, or policy-related.

A.4.1 Operations

Operating needs are expenditures that the City incurs in the day-to-day operations of its systems – examples include Metro treatment costs, employee salaries and benefits, equipment, and vehicle replacement.

For the purposes of this analysis and evaluating debt coverage requirements, the term "operating expenses" excludes debt service and other capital or non-cash expenditures, such as additions to reserves and depreciation funding. As described in the previous section, the debt coverage test considers only ongoing operational expenditures and annual debt service when evaluating a utility's ability to meet annual debt service requirements. This assumes that a utility could delay capital and non-cash expenditures, if necessary, in order to make annual debt service payments. For example, depreciation is not included as an operating expense for this forecast because, while it is a valid cost of the system, it is a non-cash expense that does not necessarily represent an outflow of cash (at least

until the underlying assets must be replaced). By contrast, the City's payment to Metro for treatment represents a discrete expense that must be paid. Purchases of capital assets are also excluded from the definition of "operating expenses" because they represent capital investment activity rather than operating activity.

Generally, budgeted line-item expenditures in the City's FY 2013/14 Operating Budget served as the basis for forecasting future operating expenses. These costs were forecasted on a line-item basis using one of the following factors:

Exhibit 7: Cost Escalation Factors

Cost Escalator	Description
General Cost Inflation	This rate applies to most expenses in the operating expense forecast, and considers the Consumer Price Index (All Urban Consumers, West Region). Although the annual CPI value has ranged from as low as -0.4% to as high as 3.7% over the last 10 years, the average annual CPI value for the same period has been about 2.5%[11]. To be conservative, the forecast for this study assumes an annual inflation rate of 3.0% through the entirety of the financial forecast.
Labor Cost Inflation	This rate was established to account for the fact that labor costs generally increase at a different rate than general inflation. It applies to labor-related expenses such as salaries, benefits, and professional services (on the premise that the rates charged by firms providing those services would likely reflect increases to their labor costs). Based on discussion with City staff on current and expected staffing, labor inflation was assumed to be 2.0% through FY 2014/15 and 4.0% thereafter.
Construction Cost Inflation	A separate inflationary rate is applied to construction expenses, which are generally included in the capital budget instead of the operating budget (there are exceptions though, such as minor asset maintenance expenses). Capital cost inflation is commonly linked to the Engineering News Record (ENR) Construction Cost Index (CCI). Our review of the historical increases in the ENR 20-city index suggests that costs have roughly increased at a rate between 3 – 4% over the last 10 years. Therefore, the rate analysis assumes a long-term historical average of 4.0% for all years.

Given the data provided and the cost escalators discussed above, projections of operating expenses were developed for future years. **Exhibit 8** summarizes the near-term forecast of operating expenses.

Exhibit 8: Operating Expense Forecast (FY 2013/14 – FY 2018/19)[12]

Operating Expenses	FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	Cumulative Δ
Payments to Metro for Treatment Service	$ 19,383,028	$ 19,964,519	$ 20,563,455	$ 21,180,359	$ 21,815,769	$ 22,470,242	$ 3,087,214
Other Operating Expenses	8,501,188	8,681,867	9,014,426	9,359,923	9,718,863	10,091,774	1,590,586
Total	**$27,884,216**	**$28,646,386**	**$29,577,881**	**$30,540,282**	**$31,534,633**	**$32,562,016**	**$ 4,677,800**

[11] United States Department of Labor, Bureau of Labor Statistics (http://www.bls.gov/cpi/). July 2010.
[12] Excludes non-operating expenditures such as rate funded capital, reserve funding, etc.

A.4.2 Capital Requirements

As part of the City's ongoing capital program, projects are assigned to various funding sources that generally reflect the type or purpose of the project. For example, projects designed to rehabilitate or replace components of the existing system are funded through the City's Sewer Facilities Replacement (SFR) Fee. Likewise, a portion of annual capital projects are funded using rate revenue.[13] For forecasting and planning purposes, if capital expenditures exceed available non-rate resources, rates would be used to meet the funding deficiency. However, it is important to note that while current City policy is to adjust capital outlays in the event of a funding deficiency, the financial forecast assumes any funding deficiencies are met with rate revenues or debt financing. This assumption makes sure that available resources will be available for planned capital projects.

The financial plan utilizes the City's five-year capital improvement plan (CIP) to determine annual capital expenditures. The CIP defines the funding source for each capital project. To better forecast future capital cash flow needs, the analysis escalates capital expenditures by capital inflation; capital inflation is assumed to be 4.0% per year, as discussed above.

The following provides the different funding sources and types of capital projects identified in the City's capital plan.

- **Operations** – These capital projects include general upkeep of system assets and are relatively low-cost projects. These projects are funded using sewer operating revenues.

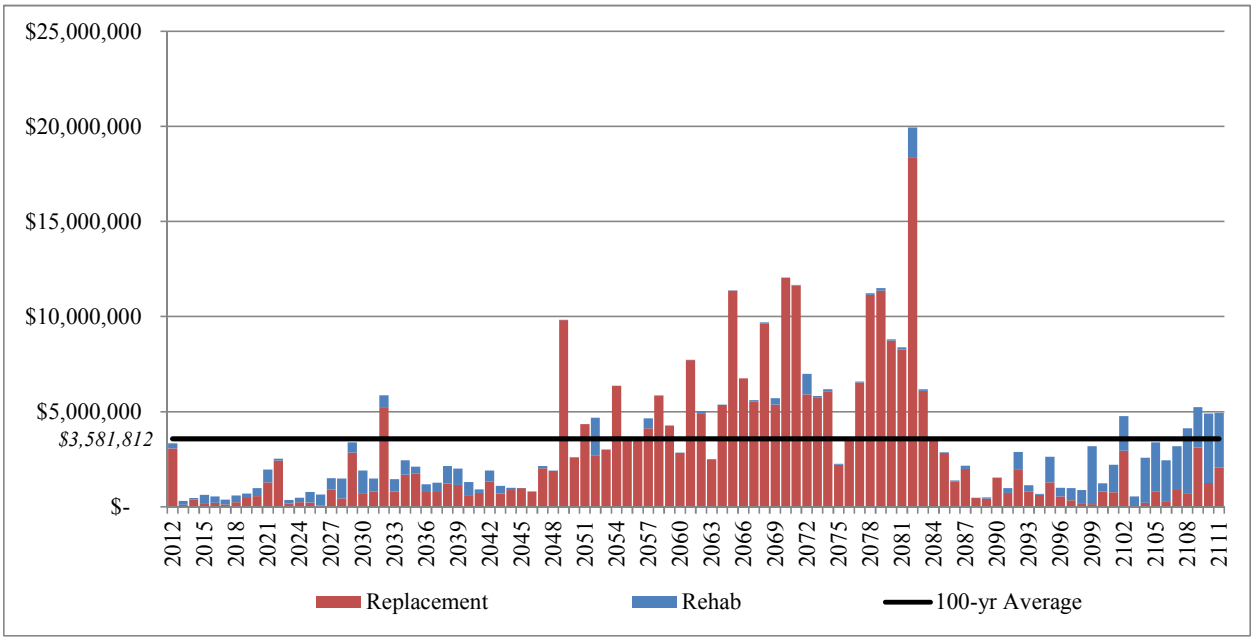
- **Trunk Sewer** – These projects are related to the expansion or improvement of the system. These projects tend to be larger in scale and a major component of the CIP. These projects are funded through the Trunk Sewer Fund which is funded by the collection of Sewer Capacity Charges that are imposed on new development.

- **Sewer Facilities Replacement (SFR)** – Capital projects related to the rehabilitation and replacement of the City's collection system constitute the largest capital obligation. These projects are integral to a well-functioning system that provides sewer collection service to City residents. These projects are funded through the Sewer Facilities Replacement Fund, which is funded by a portion of monthly rate revenue (the Sewer Facilities Replacement Fee). The Sewer Facilities Replacement fund is tracked in the rate analysis as a "restricted" account of cash resources dedicated to ongoing reinvestment in the utility's infrastructure and fixed assets. It is designed to stabilize the impacts to rates caused by the natural peaks in the spending patterns of the capital replacement program. Cash accumulates in the fund when spending is low; the balance is drawn down during periods of more intense capital investment. Additionally, there is no minimum or maximum cash balance to be held in the replacement fund.

  The City has developed its Wastewater Asset Management Program (WAMP), which serves as the basis for determining the annual capital replacement needs. **Exhibit 9** summarizes the projected replacement needs over the next hundred years:

[13] It is important to note that the standard sewer rate includes the Sewer Facilities Replacement Fee – the fee is currently set at $0.18/hcf of estimated sewer discharge.

Exhibit 9: Collection System Renewal Needs per WAMP



The Sewer Facilities Replacement (SFR) Fee revenues are used to fund a portion of the system's replacement needs based on depreciation expense. While the City currently funds only about 30% of full system depreciation, it could fund a larger percentage of system depreciation over time and provide funding for the costs designated by the WAMP. Based on preliminary WAMP drafts, the City estimates annual WAMP project costs on the order of $3 million in current dollars (when adjusted for inflation, the annual expenditures are expected to increase to almost $7 million over the next 20 years); For FY 2013/14, SFR Fees are expected to generate $1.8 million in annual funding.[14] This analysis uses projected sewer flows to estimate future SFR Fee revenue.

Replacement Funding

As asset rehabilitation and replacement is the largest component of the City's capital program, replacement fund contributions are an integral component of the financial plan. As previously noted, these contributions are collected through the SFR Fee and represent the City funding future replacement needs based on a portion of the sewer utility's annual depreciation expense. Funding replacement allows the City to actively reinvest in the collection system and to continue providing reliable service to the City's residents. The City currently uses replacement funding to pay for the "replacement" portion of the utility's CIP. However, the City wishes to boost replacement funding in order to meet expected WAMP project costs. To enhance the stability and adequacy of future replacement funding, this analysis developed a strategy to progressively shift the SFR Fee from a volumetric rate to a flat rate and increase the amount of depreciation funding over time. This strategy is outlined in further detail in the **Section IV** of this report. It is important to note that while the SFR Fee provides a source of cash funding for future replacement needs, it is not intended to fully fund those needs – the City's long-term financial

[14] FY 2012/13 estimated SFR Fee revenue as stated in the Amended FY 2012/13 Budget.

strategy will involve funding infrastructure replacement through a combination of cash and debt financing.

- **Sewer Development Infrastructure Fund (Sewer DIF) –** These are capital projects related to specific developments within the City. These projects are fully funded through the utility's three DIF funds, with each fund related to a particular trunk sewer. For the purposes of this study, all DIF funds are considered a single fund.

- **Storm Drainage –** For the purposes of this study, all projects related to storm drainage are assumed to be fully funded through the Storm Drain Fund and are not included as part of this analysis.

- **Other** – The five-year CIP also assigned capital projects to the Special Sewer Fund. Given that the City is considering removing or consolidating the Special Sewer Fund, it is expected that no future capital projects will be paid for out of the Special Sewer Fund. Also, no capital projects were assigned to the Special Sewer Fund in the five-year CIP.

Exhibit 10 provides detail on the magnitude of capital costs planned for the City's sewer utility.

Exhibit 10: Capital Improvement Plan (FY 2012/13 – FY 2017/18)

Five-Year Capital Improvement Plan	FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	Total
Operations	$ 57,300	$ 53,248	$ 55,378	$ 57,593	$ -	$ -	$ 223,519
Trunk Sewer	-	520,000	-	-	-	-	520,000
Replacement	1,500,000	1,808,000	2,116,320	2,424,973	2,500,000	3,649,959	13,999,252
Sewer DIF	916,300	-	324,480	-	-	-	1,240,780
Total	**$ 2,473,600**	**$ 2,381,248**	**$ 2,496,178**	**$ 2,482,566**	**$ 2,500,000**	**$ 3,649,959**	**$15,983,550**

In addition to the City-defined funding sources, utilities often utilize debt financing for larger capacity projects. The City's five-year CIP does not require the use of debt financing but out-year capital needs will likely require debt financing – specifically, the City's share of PLWTP upgrade costs.

The full cost of the PLWTP upgrade allocated to the City is estimated to total $97.3 million. The recommended financial scenario uses rates to fund a portion of this cost with cash; however, the remaining $77.1 million will require additional funding sources, namely debt. In addition to debt, the City believes grants will be able to offset a portion of the upgrade costs; however, as of the writing of this report the City has not secured grant money. While not within the five-year rate forecast, fully funding $77.1 million in debt using a 30-year bond at an assumed 6.0% interest rate would require annual debt service payments of $6.3 million. These annual debt payments would be made primarily with Sewer Service Charge revenues, though City staff could also use available Sewer Capacity Charge revenue as needed. For financial planning, FCS GROUP recommends limiting the reliance on Sewer Capacity Charges to pay debt service and meet bond coverage requirements due to the unpredictable nature of growth – however, it may be appropriate to assume the use of a percentage of projected annual revenues to offset or phase in the rate impacts of new debt service.

Additionally, in order to meet future growth the City will need to purchase additional capacity at the PLTWP in the future. Based on current sewer flows and capacity projections, the City would face a treatment capacity deficit of roughly 1 MGD in FY 2024/25 – the flow projections shown in Table 3-1 of the 2007 Sweetwater Authority Membrane Bioreactor Feasibility Study suggest that this deficit could increase by another 1.5 MGD by buildout (expected to occur in 2030). The cost of this additional capacity has been valued at $14.38 per gallon per day (gpd) of sewer flow. Escalating the assumed capacity unit cost to future dollars, the total cost of the additional capacity would be roughly $32.8 million in FY 2024/25. This additional capacity cost is included as a long-term capital

expenditure that would be paid for using the funds deposited in the City's Trunk Sewer Capacity Reserve Fund. Based on current growth forecast and system capacity charges, the Trunk Sewer Fund would have sufficient funds to fully fund the purchase of an additional 1MGD of capacity in FY 2024/25. As previously noted, it is important to note that growth forecasts are subject to change and capacity purchases may be required sooner or later than forecasted.

A.5 Policy Requirements

In addition to the operating and capital expenses discussed above, there are also expenses related to the City's policy decisions. The City recently completed draft financial reserve policies for the sewer utility. The policies are designed to keep the sewer utility in a financially viable and fiscally healthy position by providing adequate reserves for daily operations as well as emergencies.

A review of the City's policies found that the draft policies provide the needed level of reserves and are appropriate given the utility's operating needs. The following section discusses each reserve in further detail.

A.5.1 Minimum Working Capital & Rate Stabilization Reserve

The working capital and rate stabilization reserve represent the absolute minimum balance in the total cash reserve for the Sewer Service Revenue Fund – the Sewer Service Revenue Fund acts as the utility's operating fund, where revenues are deposited and expenditures are paid. Combined, the reserves are designed to accommodate the natural variability in revenues and expenditures, including potential disruptions of cash flows due to varied billing methodologies, short-term fluctuations, and annual cycles.[15] Addressing each reserve separately,

1. The working capital reserve intends to protect the City from natural fluctuations in revenue and expense cycles, which is prudent given that the City bills customer bimonthly but incurs expenses continuously throughout the year.

2. The rate stabilization reserve intends to provide the City with a greater degree of flexibility to "smooth" rates and phase increases in over multiple years, which is prudent given the potential variability in the City's payments to Metro.

The City's draft policy proposes a target reserve balance equal to 180 days of operating expenditures. This level of reserves is appropriate given the pattern of the City's cash flow. FCS GROUP reviewed the City's monthly cash flows to determine the magnitude of cash flow variations. The City's quarterly payments to Metro account for large variations in monthly cash flows; each payment is equal to roughly 75% of total expenditures in each three-month quarter. Additionally, a majority of the City's revenues are collected in bi-monthly installments, creating additional need to have reserves on hand during months of minimal revenue collection. Given these findings, 180 days is a prudent level of reserves to meet operating obligations, specifically the quarterly payments to Metro.

Based on the City's reserve policies and review of monthly cash flows, the analysis assumes a working capital and rate stabilization reserve equal to 180 days of operating expenditures, each reserve being set at 90 days of operating expenditures. At these levels the annual working capital and rate stabilization reserve requirement equates to roughly $13.8 million in FY 2013/14. In order to

[15] City of Chula Vista Draft Financial Reserve Policies

minimize impacts to ratepayers, the City may choose to incrementally reach the targeted 180-day reserve over multiple fiscal years.

A.5.2 Sewer Emergency Reserve

The proposed Sewer Emergency Reserve is designed to provide available cash to repair or replace major failures of fixed assets and/or equipment. An asset failure might include a fire at a facility or a localized break or damage to infrastructure. The emergency reserve would provide the needed funds immediately in order to quickly respond to the event and to facilitate the speedy restoration of normal operations without impeding operations elsewhere in the utility. Additionally, litigation or settlement costs or an unexpected liability may also be covered by the reserve. The reserve amount is placed in the Sewer Service Revenue Fund and is funded through net cash flow from operations. Unlike the working capital and rate stabilization reserve, the Emergency Reserve represents unrestricted resources available for appropriations by the City Council. If the Emergency Reserve is used, the funds should be replenished in the subsequent fiscal year. Based on the City's financial policies, the analysis assumes a reserve level equal to 5% of operating expenditures – this equates to a target balance of $1.4 million for FY 2013/14.

Policy Consideration

While the draft reserve policy provides adequate resources to meet potential emergencies, it does not directly account for a growing asset base. To create a closer nexus with asset costs and their potential failure, the City should consider adjusting the reserve to equal a percentage of gross fixed asset value (original cost of plant-in-service, not adjusted for depreciation). This would be especially prudent if the City were to own a portion of the expanded recycled water network or own and operate its own treatment plant as each would represent a significant cost if emergency repairs were needed. An industry standard is to set a reserve target of 2% of gross fixed assets. Given that the City's fixed asset records indicate a total historical investment of $403 million in existing assets[16], this reserve amount would equate to roughly $8.1 million. If the target reserve balance is calculated on depreciated assets, it would be $3.3 million based on $164 million in depreciated fixed assets. These alternative methodologies and target reserve levels respectively reflect increases of $6.3 million and $1.5 million over the $1.8 million required pursuant to the City's draft policy.

A.5.3 Vehicle Replacement Reserve

The City's draft policy establishes a Vehicle Replacement Reserve in which money is set aside to fund the replacement of aging utility vehicles. The allocation is designed to provide level funding of the cyclical vehicle replacement schedule from revenues accumulated in the Sewer Service Revenue Fund. The City's Operations Vehicle Replacement Schedule requires more vehicles to be replaced in certain years than in other years; the resulting spikes in expenditures can negatively affect the rates charged to customers. To minimize the impact to rates, an annual allocation of funds based on a rolling average cost of replacing all vehicles over the lifespan of the existing fleet is employed. The resulting allocation is collected through Sewer Service Charges and accumulates in the Sewer Service Revenue (Operating) Fund with annual vehicle replacement costs debited against the accumulated balance. It is important to note that, unlike a standard reserve, there is no minimum balance for the Vehicle Replacement Reserve – funds can be drawn to or below zero, with the balance restored in years with minimal vehicle replacement needs. The annual allocation for FY

[16] Based on City's fixed asset replacement schedule asset values – as of 3/5/2012.

2013/14 is $556,548, and is expected to increase to $614,474 by FY 2018/19 based on the City's vehicle replacement schedule and an assumed fleet lifespan of 15 years.

Policy Consideration

A Vehicle Replacement Allocation based on a fixed replacement schedule allows the City to plan accordingly within the time frame of the replacement schedule. However, as the City moves closer to the end year of the schedule, the allocation does not update to account for replacement costs in the years afterward. Given this, reviewing and updating the annual allocation amount will support the City's goal of adequately funding its vehicle fleet. Given that vehicle replacements tend to follow a cyclical pattern, an annual review and update may prove burdensome and unnecessary. As such, it would be effective to review and update the allocation with each five-year financial plan developed by the City or its consultant.

The assumed reserve policies are summarized below:

Reserve	Purpose	Minimum Balance	Maximum Balance
Working Capital	▪ Manage differences in revenue and expense cycles	▪ 90 days of operating expenses ($6.9 million in 2014)	▪ 125% of minimum balance ($8.6 million in 2014)
Rate Stabilization	▪ Protect against unforeseen fluctuations in revenues or expenses	▪ 90 days of operating expenses ($6.9 million in 2014)	▪ 125% of minimum balance ($8.6 million in 2014)
Emergency	▪ Provide funding for emergency asset replacement and insurance deductibles	▪ 5% of operating expenses ($1.4 million in 2014)	▪ 125% of minimum balance ($1.7 million in 2014)
Vehicle Replacement	▪ Levelize cost impacts of vehicle replacement needs	▪ Vehicle replacement allocation ($556,548 in 2014)	
EPA Permit Renewal Liability	▪ Accrue funding for PLWTP upgrade (recommended scenario)	▪ Annual transfers of about $1.8 million from 2015 – 2025 (recommended scenario only)	

A.6 Resources & Revenues

With the City's expenditures defined, the next step in the revenue requirement analysis is to define (and forecast) the sources of revenue available to meet those needs.

A.6.1 Operating Revenues

- **Sewer Rates** – This revenue is derived from the monthly sewer rates paid by customers for use of the City's sewer collection system, and represents the City's primary source of controllable revenue. As defined by the revenue requirement, sewer rates must meet all financial obligations not covered by other revenue sources. For forecasting purposes, this form of revenue is assumed to vary based on changes in the customer base, changes in demand (amount of sewer flow generated), and adjustments to rates. Assuming an annual reduction of 1.50% in demands, annual customer growth of 1.05%, and that approximately 81% of rate revenues are generated through variable charges, collected revenues (at existing rates) are expected to decrease by 0.18% annually over the five-year planning horizon.[17] If no rate increases were adopted, rate revenues would decrease by a cumulative 0.90% over the five-year forecast. Given the ever-changing economic landscape, this assumption should be revisited with staff as economic conditions in the region change.

- **Interest Earnings** – The City derives this revenue from the cash held in its various funds. FY 2012/13 actual revenue reports indicate that the Sewer Service Revenue Fund earned $90,296 in investment interest, given a 7/1/2012 balance of $18,410,021 – this suggests an effective interest earnings rate of about 0.5%. Based on reported interest earnings for the previous two years and current market interest rates, future interest earnings are projected using an assumed earnings rate of 1.0%.

- **Miscellaneous** – Miscellaneous revenues (for the purpose of this analysis, any revenue other than sewer rates or interest earnings) fall into this category – examples include late fees, activation fees, and other miscellaneous service fees. It is assumed that miscellaneous fees would increase by either development growth (for customer-related fees such as late fees) or general cost inflation (for miscellaneous revenues that are not directly attributable to customers, such as insurance policy reimbursements).

Exhibit 11 summarizes the near-term forecast of operating revenue for the utility prior to any future rate increase:[18]

Exhibit 11: Operating Revenue Forecast with No Rate Increase (FY 2013/14 – FY 2018/19)

Operating Revenues	FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	Cumulative Δ
Sewer Service Charges (At Existing Rates)	$ 29,195,886	$ 29,143,238	$ 29,090,685	$ 29,038,227	$ 28,985,863	$ 29,052,467	*$ (143,419)*
Other Operating Revenue	453,500	441,529	444,590	447,684	450,809	453,968	*468*
Revenue Fund Interest Earnings	214,149	226,044	224,845	218,603	224,560	234,502	*20,353*
Total Revenues	$ 29,863,535	$ 29,810,811	$ 29,760,120	$ 29,704,513	$ 29,661,232	$ 29,740,936	*$ (122,599)*

[1] Revenue figures are as of September 2013, and are subject to future adjustments as part of the City's annual financial reporting process.

Storm Drain Fee

The City's sewer rate structure includes a Storm Drain Fee of $0.70 per month for single-family residences and $0.06 per hcf for all other customers. Storm Drain Fee revenue is not used to fund the

[17] Sewer rate revenue escalator of -0.18% = (1+1.05%)*(1-1.5%*81%)-1

[18] Given the variability of revenues generated under each scenario (detailed later in this memo), the operating revenues in this table do not reflect any rate increases, and are presented to show the magnitude of revenues currently generated by the utility.

sewer utility's operations, and is not considered in the rate revenue analysis or any other portion of this study.

A.6.2 Capital Revenues

Capital revenues are revenues derived from, or for, capital activities and are often restricted accordingly. These revenues are directly excluded from the revenue requirement analysis; however, they may indirectly affect the revenue requirement if they do not provide adequate revenues to fund all capital projects, rates could be used to meet any unfunded project costs. Examples of these revenues include:

- **Sewer Capacity Charges** – Sewer Capacity Charge (SCC) revenues are used to fund capacity-expanding capital projects and are deposited into the Trunk Sewer Capital Reserve Fund. The analysis draws from existing reserves when capital projects costs exceed available SCC revenues. As these revenues come from new development, they are relatively volatile and subject to changes in the housing and commercial real estate markets. This has been evident in recent years with minimal growth and SCC revenue. For this analysis, future capacity charge revenues are forecasted based on projected growth assuming a growth rate of 1.05%.[19] Based on this forecast, SCC revenues are expected to fully fund capital projects planned for the Trunk Sewer Capital Reserve during the five-year financial planning horizon. It is important to note that the City is in the process of updating its Wastewater Master Plan and the five-year financial planning horizon is subject to change based on updated costs or infrastructure needs stated in the updated Wastewater Master Plan.

- **Sewer Facilities Replacement (SFR) Fees** – The sewer rate structure includes an SFR Fee (currently $0.18 per hcf) that is used to fund the replacement portion of the City's CIP. These revenues are deposited into the Sewer Facilities Replacement Fund and are used to fund the nearly $14.0 million in replacement capital projects that are planned to occur between FY 2013/14 and FY 2018/19. SFR Fee revenue is forecasted based on projected sewer flows – sewer flows are projected based on a combination of development growth and sewer demand or changes in customer-related sewer flows. Based on an assumed annual customer growth rate of 1.05% and an assumed annual per-capita demand growth rate of -1.50%, this analysis assumes an annual growth rate of -0.47% in total wastewater flows during the five-year planning horizon. Due to low development and historical and continued conservation, a negative escalation will provide a conservative estimate of future customer usage and SFR Fee revenue. SFR Fees are expected to be sufficient to cover the planned capital replacement projects over the study period. Because SFR Fee revenues have been set to equal expenses during this time, the SFR Reserve balance is expected to remain relatively consistent over the study period. As the balance increases in the future, accumulated SFR Fund reserves will be used to meet any unmet needs.

- **Sewer Rates** – As previously noted, the City designates a certain percentage of the CIP to be funded through utility rates. This analysis assumes that any unfunded CIP projects would be met using sewer rates.[20] – however, the five-year financial forecast does not indicate a need for additional rate funding of the CIP to occur in the five-year planning period.

[19] Growth assumption is based on the City's own five-year financial forecast.
[20] It should be noted that general City policy is to adjust CIP expenditures if underfunding were to occur, to avoid potentially adverse impacts to rates.

- **Grants** – Grants are most often linked to a specific project with a specific purpose (such as complying with state or federal regulations). The City currently does not have any projects identified as grant-funded projects during the five-year planning period.

- **Debt Proceeds** – The City will likely need to issue debt in the future to fund major capital projects (i.e., City owned treatment plant). In doing so, debt proceeds will be available to fund these projects.

- **Investment Interest** – The City derives this revenue from invested funds – as previously noted. Interest earned on the cash balances in the capital-related funds is assumed to be available for use toward project expenses and other capital revenue needs.

This analysis separately forecasts SCC and SFR Fee revenues. SCC revenues are projected by using growth assumptions to determine how many new customers are connecting to the system each year. This forecast assumes the current SCC of $3,478 and an annual customer growth rate of 1.05% for each year in the study period. Alternatively, SFR Fee revenues are forecast by determining the level of replacement funding (based on a percentage of depreciation expense) to generate through SFR Fees each year. To meet the City's goal of funding a higher level of system reinvestment as well as meeting expected WAMP-defined replacement costs, the annual replacement funding level is increased over the forecast period. By FY 2018/19, the analysis funds $4.0 million of depreciation, an increase of about $2.2 million from projected FY 2013/14 SFR Fee revenues. **Exhibit 12** displays the amount of forecasted SCC and SFR Fee revenues that are eligible for capital uses.

Exhibit 12: SCC and SFR Fee Revenue Forecast

	FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	Cumulative Δ
SCC Revenue	$ 1,824,633	$ 1,843,792	$ 1,863,152	$ 1,882,715	$ 1,902,483	$ 1,922,459	*$ 97,826*
SFR Fee Revenue	1,827,430	1,958,000	2,266,320	2,574,973	2,850,000	3,971,551	*2,144,121*
Total	$ 3,652,063	$ 3,801,792	$ 4,129,472	$ 4,457,688	$ 4,752,483	$ 5,894,010	*$ 2,241,947*

Note that the rate adjustments discussed in this report only apply to the SFR Fee – as previously stated, SCC revenue is forecasted based on the existing SCC and assumed growth in the customer base.

B. FORECASTED RATE REVENUE REQUIREMENTS

Various rate revenue requirement scenarios were developed for the City to consider for the utility. These scenarios were developed in collaboration with City staff and considered the long-term viability of the utility, the feasibility of rate increases, and the goal of maintaining the necessary level and quality of service for the system.

Given the City's potential long-term capital needs, the capital funding strategy is a key part of the revenue requirement analysis. While these projects are beyond the five-year planning horizon, it is prudent to adequately plan ahead to limit or smooth impacts to ratepayers. The scenarios consider potential capital expenditures and the financing mechanisms for funding capital needs. The developed strategy can potentially affect the utility's cash balances, debt issuance and related obligations, and future revenue streams from rates (including SFR Fees), and SCCs.

The revenue requirement analyses also account for recommended financial policies described in **Section III.A.5**. Specifically, unless otherwise noted, each of the scenarios target a minimum unrestricted working capital and rate stabilization reserve balance equivalent to a minimum of 180

days (roughly 50%) of annual operating expenses and a bond coverage ratio of 1.25 times annual debt service by the time of the first debt issuance.

Three scenarios were evaluated:

- **Scenario I – Baseline:** This scenario assumes that operations continue at present levels. It is assumed that this scenario is not viable under a longer-term horizon but will adequately fund short-term needs.
- **Scenario II – Point Loma Upgrade:** This scenario develops a financial plan in which the PLWTP is upgraded to secondary treatment following the expiration of the EPA 301(h) waiver.
- **Scenario III – Membrane Bioreactor (MBR) Plant Construction:** This scenario develops a financial plan to fund the construction of a City-owned treatment plant and reduce reliance on Metro.

Scenario I – Baseline

This scenario assumes that operations continue at normal levels, and does not consider potential increases in Metro-related treatment costs and /or the purchase of the City's own treatment plant. While this option best represents the sewer utility's current operations, it does not adequately plan for the future. This scenario best represents the impacts of a decision by the City to postpone planning-related rate increases. **Exhibit 13** below outlines the rate impacts of the scenario.

Exhibit 13: Near-Term Financial Forecast (Baseline Scenario)

Five-Year Financial Forecast [1] Scenario: Baseline	FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	Cumulative Δ
Projected Operating Costs:							
Metro	$ 19,383,028	$ 19,964,519	$ 20,563,455	$ 21,180,359	$ 21,815,769	$ 22,470,242	$ 3,087,214
Other	8,501,188	8,681,867	9,014,426	9,359,923	9,718,863	10,091,774	1,590,586
Total	$ 27,884,216	$ 28,646,386	$ 29,577,881	$ 30,540,282	$ 31,534,633	$ 32,562,016	$ 4,677,800
Projected Capital Costs							
Operating Reserve	$ 57,300	$ 53,248	$ 55,378	$ 57,593	$ -	$ -	
SFR Reserve	1,500,000	1,808,000	2,116,320	2,424,973	2,500,000	3,649,959	
Other Funds	916,300	520,000	324,480	-	-	-	
Total	$ 2,473,600	$ 2,381,248	$ 2,496,178	$ 2,482,566	$ 2,500,000	$ 3,649,959	
Aggregate Rate Revenue Adjustment	***0.0%***	***4.5%***	***4.5%***	***4.5%***	***4.5%***	***4.5%***	***24.6%***
Monthly Single-Family Bill @ 10 hcf [2]	***$40.16***	***$43.80***	***$46.05***	***$48.36***	***$50.81***	***$53.01***	***$12.85***
Projected Rate Revenue After Rate Adjustments:							
Sewer Service Charges	$ 29,195,886	$ 30,397,454	$ 31,486,923	$ 32,646,768	$ 33,915,524	$ 34,561,132	$ 5,365,246
SFR Fees	$ 1,827,430	$ 1,958,000	$ 2,266,320	$ 2,574,973	$ 2,850,000	$ 3,971,551	2,144,121
Total	$ 31,023,316	$ 32,355,454	$ 33,753,243	$ 35,221,740	$ 36,765,524	$ 38,532,683	$ 7,509,367
Ending Operating Reserve Balance [3]	$ 22,604,355	$ 24,323,125	$ 25,555,856	$ 28,027,192	$ 30,915,653	$ 33,516,470	$ 10,912,115
Targeted Minimum Balance:							
Working Capital Reserve	*$ 6,875,560*	*$ 7,063,492*	*$ 7,293,176*	*$ 7,530,480*	*$ 7,775,663*	*$ 8,028,990*	*$ 1,153,430*
Rate Stabilization Reserve	*6,875,560*	*7,063,492*	*7,293,176*	*7,530,480*	*7,775,663*	*8,028,990*	*1,153,430*
Emergency Reserve	*1,394,211*	*1,432,319*	*1,478,894*	*1,527,014*	*1,576,732*	*1,628,101*	*233,890*
Total	*$ 15,145,331*	*$ 15,559,304*	*$ 16,065,246*	*$ 16,587,975*	*$ 17,128,057*	*$ 17,686,081*	*$ 2,540,750*
Net Available Operating Reserve Balance	$ 7,459,023	$ 8,763,821	$ 9,490,610	$ 11,439,217	$ 13,787,596	$ 15,830,388	$ 8,371,365
Ending Sewer Facilities Replacement Reserve Balance	$ 3,005,037	$ 3,035,087	$ 3,065,438	$ 3,096,093	$ 3,327,054	$ 3,531,916	$ 526,879
Total Ending Reserve Balance [4]	$ 25,609,392	$ 27,358,212	$ 28,621,295	$ 31,123,284	$ 34,242,706	$ 37,048,386	$ 11,438,994
Vehicle Replacement Allocation	$ 556,548	$ 567,679	$ 579,032	$ 590,613	$ 602,425	$ 614,474	$ 57,926
Ending Vehicle Replacement Reserve Balance [5]	$ 686,093	$ 607,149	**$ (122,572)**	$ 187,240	$ 566,154	$ 1,019,205	$ 333,112

[1] Excludes Storm Drain Fee revenues and expenses.

[2] Assumes that 90% of usage enters the sewer system and is subject to the sewer volume rate (see **Exhibit 1**)

[3] Ending Operating Reserve balance reflects funding of vehicle replacements net of the annual vehicle replacement allocation.

[4] Includes Operating Reserve and SFR Reserve. Excludes Trunk Sewer Capital Reserve.

[5] Included in the ending Operating Reserve balance.

Scenario II – Point Loma Upgrade

Metro's EPA waiver is up for renewal in FY 2015 and is not expected to be renewed by the EPA. Under this scenario, Metro would need to add secondary treatment to the PLWTP within 10 years at a significant cost. As a contributing member to the regional treatment plant, Chula Vista would share in the cost of the upgrade through the annual rate that it pays to Metro for treatment service.

It is expected that Metro will have 10 years after the expiration of the EPA waiver to institute secondary treatment. Under this scenario, during the 10-year period the City is building a dedicated reserve that will offset the City's share of capital related costs as well expected increases in treatment rates. Current estimates place the cost of upgrading to secondary treatment at $1 billion, with Chula Vista's share being $97 million. By actively planning for the PLWTP upgrade, the City will be in a strong financial position to afford such costs while mitigating impacts to ratepayers.

As noted, a major component of this scenario is the funding of a reserve to be used to mitigate Metro costs related to the upgrade of the PLWTP. The EPA Permit Renewal Liability Reserve is funded through annual contributions of $1.8 million into a separate account, with the intent being to reach a target balance of $20.2 million (20% of Chula Vista's share of the upgrade cost) by FY 2024/25 (10 years after the expiration of the waiver). If substantial increases in Metro-related costs occur sooner than expected, the can City draw down reserve levels prior to FY 2024/25 to manage impacts to ratepayers. To be consistent with the City's policy for managing balances for its other utility reserves, if funds are appropriated from the reserve before its intended use, the funds should be replenished in subsequent fiscal years. If the magnitude of the withdrawal is material, the City should develop a plan to incrementally replenish the reserve to its previous or scheduled level. **Exhibit 14** outlines the major findings of Scenario II.

Exhibit 14: Near-Term Financial Forecast (Point Loma Upgrade Scenario)

Five-Year Financial Forecast [1] Scenario: Point Loma Upgrade	FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	Cumulative Δ
Projected Operating Costs:							
Metro	$ 19,383,028	$ 19,964,519	$ 20,563,455	$ 21,180,359	$ 21,815,769	$ 22,470,242	$ 3,087,214
Other	8,501,188	8,681,867	9,014,426	9,359,923	9,718,863	10,091,774	1,590,586
Total	$ 27,884,216	$ 28,646,386	$ 29,577,881	$ 30,540,282	$ 31,534,633	$ 32,562,016	$ 4,677,800
Projected Capital Costs							
Operating Reserve	$ 57,300	$ 53,248	$ 55,378	$ 57,593	$ -	$ -	
SFR Reserve	1,500,000	1,808,000	2,116,320	2,424,973	2,500,000	3,649,959	
Other Funds	916,300	520,000	324,480	-	-	-	
Total	$ 2,473,600	$ 2,381,248	$ 2,496,178	$ 2,482,566	$ 2,500,000	$ 3,649,959	
Aggregate Rate Revenue Adjustment	***0.0%***	***4.5%***	***4.5%***	***4.5%***	***4.5%***	***4.5%***	***24.6%***
Monthly Single-Family Bill @ 10 hcf [2]	***$40.16***	***$43.73***	***$45.96***	***$48.25***	***$50.68***	***$52.87***	***$12.71***
Projected Rate Revenue After Rate Adjustments:							
Sewer Service Charges	$ 29,195,886	$ 30,397,454	$ 31,486,923	$ 32,646,768	$ 33,915,524	$ 34,561,132	$ 5,365,246
SFR Fees	$ 1,827,430	$ 1,958,000	$ 2,266,320	$ 2,574,973	$ 2,850,000	$ 3,971,551	2,144,121
Total	$ 31,023,316	$ 32,355,454	$ 33,753,243	$ 35,221,740	$ 36,765,524	$ 38,532,683	$ 7,509,367
Ending Operating Reserve Balance **[3]**	$ 22,604,355	$ 22,484,515	$ 21,860,251	$ 22,456,020	$ 23,450,160	$ 24,137,712	$ 1,533,357
Targeted Minimum Balance:							
Working Capital Reserve	*$ 6,875,560*	*$ 7,063,492*	*$ 7,050,070*	*$ 7,279,464*	*$ 7,516,474*	*$ 8,028,990*	*$ 1,153,430*
Rate Stabilization Reserve	*6,875,560*	*7,063,492*	*7,050,070*	*7,279,464*	*7,516,474*	*8,028,990*	*1,153,430*
Emergency Reserve	*1,394,211*	*1,432,319*	*1,478,894*	*1,527,014*	*1,576,732*	*1,628,101*	*233,890*
Total	*$ 15,145,331*	*$ 15,559,304*	*$ 15,579,035*	*$ 16,085,943*	*$ 16,609,680*	*$ 17,686,081*	*$ 2,540,750*
Net Available Operating Reserve Balance	$ 7,459,023	$ 6,925,211	$ 6,281,216	$ 6,370,077	$ 6,840,480	$ 6,451,630	$ (1,007,393)
Ending Sewer Facilities Replacement Reserve Balance	$ 3,005,037	$ 3,035,087	$ 3,065,438	$ 3,096,093	$ 3,327,054	$ 3,531,916	$ 526,879
Ending EPA Permit Renewal Liability Reserve Balance	$ -	$ 1,838,610	$ 3,677,220	$ 5,515,830	$ 7,354,439	$ 9,193,049	$ 9,193,049
Total Ending Reserve Balance **[4]**	$ 25,609,392	$ 27,358,212	$ 28,602,909	$ 31,067,942	$ 34,131,653	$ 36,862,677	$ 11,253,286
Vehicle Replacement Allocation	$ 556,548	$ 567,679	$ 579,032	$ 590,613	$ 602,425	$ 614,474	$ 57,926
Ending Vehicle Replacement Reserve Balance **[5]**	$ 686,093	$ 607,149	**$ (122,572)**	$ 187,240	$ 566,154	$ 1,019,205	$ 333,112

[1] Excludes Storm Drain Fee revenues and expenses.

[2] Assumes that 90% of usage enters the sewer system and is subject to the sewer volume rate (see **Exhibit 1**)

[3] Ending Operating Reserve balance reflects funding of vehicle replacements net of the annual vehicle replacement allocation.

[4] Includes Operating Reserve and SFR Reserve. Excludes Trunk Sewer Capital Reserve.

[5] Included in the ending Operating Reserve balance.

Note that the sample single-family bills shown in **Exhibit 14** are slightly different from those shown in **Exhibit 13** because of the addition of the EPA Permit Renewal Liability Reserve funding transfers to the functional cost allocation discussed in **Section IV.C.1** of this report.

Scenario III – Membrane Bioreactor (MBR) Plant Construction

In this scenario, the City builds its own treatment plant in order to avoid purchasing additional capacity from Metro when the City's current capacity is exceeded by growth. Adjusting for future cost inflation at 4% per year, the longer-term forecast projects that the utility would need to spend around $121 million in the mid-2020s for Phase 1 and an additional $35 million in the early 2030s for Phase 2 of the MBR Plant. Projected SCC revenues and other resources in the Trunk Sewer Capital Reserve are expected to be able to fund about 36% of this future cost. If the City were to issue a total of $100 million in 30-year bonds (assuming an interest rate of 6%) to fund this cost, the future annual debt service impact would be around $8.0 million. Although the MBR Plant would not be a "replacement project" per se, the City could consider using SFR Fee revenues as a source of funding for its construction because it would benefit existing customers as well as growth. The corresponding five-year financial plan is displayed below in **Exhibit 15**. Because the majority of these costs are assumed to occur in the mid-2020s, Scenario III is identical to Scenario I during the study period. Due to the relative uncertainty of this scenario, this scenario is not recommended.

Exhibit 15: Near-Term Financial Forecast (MBR Plant Construction)

Five-Year Financial Forecast [1] Scenario: MBR Plant Construction	FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	Cumulative Δ
Projected Operating Costs:							
Metro	$ 19,383,028	$ 19,964,519	$ 20,563,455	$ 21,180,359	$ 21,815,769	$ 22,470,242	$ 3,087,214
Other	8,501,188	8,681,867	9,014,426	9,359,923	9,718,863	10,091,774	1,590,586
Total	$ 27,884,216	$ 28,646,386	$ 29,577,881	$ 30,540,282	$ 31,534,633	$ 32,562,016	$ 4,677,800
Projected Capital Costs							
Operating Reserve	$ 57,300	$ 53,248	$ 55,378	$ 57,593	$ -	$ -	
SFR Reserve	1,500,000	1,808,000	2,116,320	2,424,973	2,500,000	3,649,959	
Other Funds	916,300	520,000	324,480	-	-	-	
Total	$ 2,473,600	$ 2,381,248	$ 2,496,178	$ 2,482,566	$ 2,500,000	$ 3,649,959	
Aggregate Rate Revenue Adjustment	***0.0%***	***4.5%***	***4.5%***	***4.5%***	***4.5%***	***4.5%***	***24.6%***
Monthly Single-Family Bill @ 10 hcf [2]	***$40.16***	***$43.80***	***$46.05***	***$48.36***	***$50.81***	***$53.01***	***$12.85***
Projected Rate Revenue After Rate Adjustments:							
Sewer Service Charges	$ 29,195,886	$ 30,397,454	$ 31,486,923	$ 32,646,768	$ 33,915,524	$ 34,561,132	$ 5,365,246
SFR Fees	$ 1,827,430	$ 1,958,000	$ 2,266,320	$ 2,574,973	$ 2,850,000	$ 3,971,551	2,144,121
Total	$ 31,023,316	$ 32,355,454	$ 33,753,243	$ 35,221,740	$ 36,765,524	$ 38,532,683	$ 7,509,367
Ending Operating Reserve Balance **[3]**	$ 22,604,355	$ 24,323,125	$ 25,555,856	$ 28,027,192	$ 30,915,653	$ 33,516,470	$ 10,912,115
Targeted Minimum Balance:							
Working Capital Reserve	*$ 6,875,560*	*$ 7,063,492*	*$ 7,293,176*	*$ 7,530,480*	*$ 7,775,663*	*$ 8,028,990*	*$ 1,153,430*
Rate Stabilization Reserve	*6,875,560*	*7,063,492*	*7,293,176*	*7,530,480*	*7,775,663*	*8,028,990*	*1,153,430*
Emergency Reserve	*1,394,211*	*1,432,319*	*1,478,894*	*1,527,014*	*1,576,732*	*1,628,101*	*233,890*
Total	*$ 15,145,331*	*$ 15,559,304*	*$ 16,065,246*	*$ 16,587,975*	*$ 17,128,057*	*$ 17,686,081*	*$ 2,540,750*
Net Available Operating Reserve Balance	$ 7,459,023	$ 8,763,821	$ 9,490,610	$ 11,439,217	$ 13,787,596	$ 15,830,388	$ 8,371,365
Ending Sewer Facilities Replacement Reserve Balance	$ 3,005,037	$ 3,035,087	$ 3,065,438	$ 3,096,093	$ 3,327,054	$ 3,531,916	$ 526,879
Total Ending Reserve Balance **[4]**	$ 25,609,392	$ 27,358,212	$ 28,621,295	$ 31,123,284	$ 34,242,706	$ 37,048,386	$ 11,438,994
Vehicle Replacement Allocation	$ 556,548	$ 567,679	$ 579,032	$ 590,613	$ 602,425	$ 614,474	$ 57,926
Ending Vehicle Replacement Reserve Balance **[5]**	$ 686,093	$ 607,149	**$ (122,572)**	$ 187,240	$ 566,154	$ 1,019,205	$ 333,112

[1] Excludes Storm Drain Fee revenues and expenses.

[2] Assumes that 90% of usage enters the sewer system and is subject to the sewer volume rate (see **Exhibit 1**)

[3] Ending Operating Reserve balance reflects funding of vehicle replacements net of the annual vehicle replacement allocation.

[4] Includes Operating Reserve and SFR Reserve. Excludes Trunk Sewer Capital Reserve.

[5] Included in the ending Operating Reserve balance.

The proposed strategy of 4.5% annual rate increases appears to hold for all three scenarios, with the key difference being the projected ending fund balances. For simplicity, all three scenarios assume the same SFR Fee revenue levels (see **Exhibit 12**); Scenario I (Baseline) and Scenario III (MBR Plant Construction) reflect adjustments to the Sewer Service Charge to arrive at 4.5% annual increases in the overall sewer rate. In both of these scenarios, the City could opt to shift the increase to the SFR Fee instead of the Sewer Service Charge. Because Scenario II (Point Loma Upgrade) assumed rate-funded transfers of $1.8 million to the EPA Permit Renewal Liability Reserve, it is expected to end the study period with less money in the Operating Reserve and the SFR Reserve – however, the overall difference in the total ending balance (including the EPA Permit Renewal Liability Reserve) is only about $186,000.

SECTION IV: COST-OF-SERVICE

As described above, the revenue requirement analysis determines the amount of revenue that sewer rates must generate. The cost-of-service analysis is intended to provide an analytical basis for recovering the forecasted revenue requirement from customers according to the unique demands they place on the system. These demands are defined by historical customer sewer flows by customer class as provided by City staff.

This cost-of-service analysis is a four-step process: (1) costs are allocated to various functional components of the system; (2) unique customer demands are defined through a customer data analysis; (3) costs are allocated to customer classes based on their demands; and (4) rates are designed to recover costs based on the previous three steps.

A unique component of the City's sewer rate structure is the incorporation of two other fees; the Storm Drain Fee and SFR Fee. For the purposes of setting the sewer rates, the Storm Drain Fee is netted from the calculation and excluded from this analysis and report. The SFR Fee is calculated separately, as discussed in greater detail below.

A. SEWER RATES BACKGROUND

Section 6 (2)(b)(1) of Proposition 218 requires that agencies providing "property-related services" (including utility service) set rates and charges that are based on the cost of providing those services. California law also requires that agencies conduct a cost-of-service study at least once every ten years so that their rates are recovering costs equitably from customers, given their relative service requirements and demand characteristics.

In 2003, Chula Vista's sewer rates were changed from a flat-fee structure, where all homes paid the same fee, to a consumption-based fee structure which bases bills on the amount of water usage. Under the new structure, assumed sewer usage was based on the lowest average water consumption for two consecutive months during the previous year's winter season of November through April. Winter months are used based on the assumption that irrigation usage tends to be minimal during those months, and that water usage records more accurately represent the flows that enter the sewer system. The 2007 Cost-of-Service Study applied return-to-sewer factors of 90% to single-family and commercial/industrial water usage, 84% to mobile home usage, and 79% to multi-family water usage. As these factors are generally consistent with industry standards (return-to-sewer factors varying from 80% to 90%), this analysis retained the 2007 assumptions.

The City's current sewer rate structure was last updated in 2007 and consists of a flat per-account charge varying by water meter size and a volumetric charge per hundred cubic feet (hcf) varying by customer class. Because the monthly volume-based charge uses a constant flow assumption for a given year, the City is protected from month-to-month volatility in water consumption. However, the City is still exposed to longer-term trends in customer water consumption behavior. A utility's exposure to changing consumption patterns has become increasingly relevant in recent years. For example, due to wetter weather and modest economic conditions, the City and the greater region have witnessed falling water demands, which has reduced the amount of revenue collected. FY 2009/10

actual sewer rate revenues (including Montgomery Sewer Charges and accounts receivable) were about $30.4 million (based on total receipts of $33.1 million, net of a $2.7 million refund from Metro for prior-year overpayments). The FY 2013/14 Budget projects that the City will collect a total of $30.5 million in sewer rate revenue during FY 2013/14, which is only slightly above FY 2009/10 revenue levels.

Due to changes in customer consumption patterns, a major concern for utilities is revenue stability. Therefore, some utilities have utilized a flat-fee structure or collect a higher percentage of revenues through fixed rates. Most commonly, fixed rates are assumed to generate revenue sufficient to meet a utility's fixed costs or costs that do not vary materially with the amount of flow placed into the system (in fact, most utility costs are fixed).

In order to enhance the stability of its revenue stream, the City has decided to increase the amount of revenue collected through fixed charges by shifting the SFR Fee from volumetric rate to a fixed rate. A phase-in approach is recommended for shifting the SFR Fee in order to mitigate financial impacts to the City's customers.

Based on a review of the City's current rate structure and input from City staff, alternative rate structures were not explored. An audit of utility billing data was conducted separately to confirm full revenue recovery and the accuracy of billing data as a basis for rate structure evaluation. A summary of these results is found in Appendix A. The cost-of-service rate structure is based on an allocation of costs across functional components to accurately determine the cost of service, with costs related to providing billing and other customer service, collecting and conveying sewer flows, and treating influent to remove chemical oxygen demand (COD) and total suspended solids (TSS).

B. CURRENT SEWER RATES

Exhibit 16 summarizes the sewer rate structure currently in place for the City's customers:

Exhibit 16: Existing Sewer Rates

Fixed Charge per Month	Sewer Service Charge
Single-Family	$8.03
All Others:	
5/8" Meter	$8.03
3/4" Meter	$8.03
1" Meter	$13.38
1-1/2" Meter	$26.76
2" Meter	$42.81
3" Meter	$80.28
4" Meter	$133.79
6" Meter	$267.59
8" Meter	$428.14

Volume Charge per Hundred Cubic Feet (hcf)	Sewer Service Charge	Sewer Facilities Replacement (SFR) Fee	Total	Rate of Return [2]
Residential				
Single-Family	$3.39	$0.18	$3.57	90%
Multi-Family	$3.39	$0.18	$3.57	79%
Mobile Homes	$3.39	$0.18	$3.57	84%
Non-Residential				
Commercial – Low	$3.39	$0.18	$3.57	90%
Commercial – Med	$4.70	$0.18	$4.88	90%
Commercial – High	$7.31	$0.18	$7.49	90%
Special Users	Varies	$0.18	Varies	90%

[1] Excludes Storm Drain Fee of $0.70 per month for single-family customers and $0.06 per hcf for other customers.

[2] The assumed percentage of water usage entering the sewer system and subject to volume charges, as published in the City's Master Fee Schedule.

The City currently offers rate assistance to low-income single-family customers. These customers pay 70% (30% discount) of the normal single-family fixed and volumetric rates. There are currently

361 single-family customers receiving a reduced rate, which represents roughly 0.8% of the total number of single-family accounts and a loss of roughly $40,000 in annual rate revenue.[21] While there is a measurable loss of revenue due to this program, late-payment penalties have mitigated any impacts to other ratepayers. However, due to the unreliable nature of income derived from these penalties and other miscellaneous sources, we have recommended that the City discontinue this program to comply with the requirements of Proposition 218. See **Section III.A.3** for additional information regarding the low-income discount program.

C. RATE DESIGN

The rate design analysis uses system planning and utility billing data to develop an allocation of costs to customer classes and define an equitable cost-based rate burden. While not an explicit goal, performing a cost-of-service analysis can result in a shift of cost burdens between customer classes as the utility's costs and customer usage patterns change over time. As previously noted, the allocation process consists of two components. First is the functional allocation which allocates costs (revenue requirement) to different functions of service. Second, costs assigned to each functional component are allocated to customer classes based on the demands that they place on the system. As previously noted, FCS GROUP considered several scenarios – based on input from City staff, the ensuing discussion of cost allocations and rate design use the revenue requirement analysis for Scenario II (Point Loma Upgrade).

C.1 Functional Allocation

The American Water Works Association (AWWA) defines a two-step process for recovering costs. First, capital and O&M costs should be allocated to applicable functional categories. For this study, four functional categories were assumed as follows:

- **Customer** costs are associated with utility billing and other functions that are equally attributable to all customers, regardless of flows or wastewater strength. This analysis allocates utility billing costs, 50% of other customer service costs, and the vehicle replacement allocation to this category. These costs are allocated between customer classes based on the number of accounts served.

- **Service** costs are associated with customer service functions that might reasonably be allocated based on capacity requirements (as defined by meter size). This analysis allocates 50% of customer service costs and General Fund transfers to this category. These costs are allocated between customers based on the number of meter equivalent units (MEUs) served.

- **Flow** costs are associated with the collection, pumping and treatment of sewage, based on volume and regardless of strength. These costs are allocated between customer classes based on estimated sewer flows – as the City does not meter most customers' sewer discharges, flows by each class are estimated using water consumption and a return-to-sewer factor.

- **Chemical Oxygen Demands (COD)** costs are associated with treating wastewater for dissolved organisms. COD costs are allocated between customer classes based on estimated COD loadings (based on estimated flows and assumed COD concentrations in the wastewater generated by each class; the assumed COD concentrations are based on Table 9 of the 2007

[21] Assumes a median usage of 10 HCF.

Cost-of-Service Rate Study). The treatment component is primarily embedded in the City's payments to Metro.

- **Total Suspended Solids (TSS)** costs relate to treating wastewater to remove solids. TSS costs are allocated between customer classes based on estimated TSS loadings (based on estimated flows and assumed TSS concentrations in the wastewater generated by each class; the assumed TSS concentrations are based on Table 9 of the 2007 Cost-of-Service Rate Study). The treatment component is primarily embedded in the City's payments to Metro.

Once the functional categories have been defined, each operating and capital cost is allocated on a line item basis to one or more of these functional categories. The functional costs are then allocated to customer classes based on the demands that they place on the system. Items that cannot be reasonably allocated between these functional categories are allocated proportionally based on the allocation of all other items.

Annual expenditures and offsetting non-rate revenues are allocated on a line-by-line basis between the functional components outlined above. An example is the allocation of treatment costs. The City is billed by Metro based on Metro's allocation of costs. Metro's fee is designed to recover costs related to Flow, COD, and TSS. Based on Metro's charges, 48% of the City's payment to Metro is related to the amount of sewage (flow), 27% for amount of suspended solids (TSS), and 25% for the amount of chemicals (COD) in the sewage. This percentage breakdown is used to allocate the annual payment to Metro, which is the City's single largest annual expenditure.

As noted in **Exhibit 14**, the recommended scenario (Scenario II – Point Loma Upgrade) shows that a total of $30.4 million must be collected through rates in FY 2014/15. These costs have been allocated to each of the functional categories; the results of this analysis are shown in **Exhibit 17**:

Exhibit 17: Functional Allocation of FY 2013/14 Revenue Requirement

Allocated FYE 2015 Revenue Requirement	Customer	Service	Flow	COD	TSS	Total
Allocated Cost	$ 2,789,507	$ 2,755,479	$ 13,621,177	$ 5,341,590	$ 5,889,700	$ 30,397,454
Percent of Total	9.2%	9.1%	44.8%	17.6%	19.4%	100.0%
Allocation Units	Accounts	MEUs	hcf	lbs	lbs	
Number of Units	51,019	62,238	6,425,088	25,992,655	7,831,833	
Cost per Unit	**$4.56**	**$3.69**	**$2.12**	**$0.21**	**$0.75**	

These unit costs are then used to develop rates for each customer class based on their customer data characteristics. The customer data analysis determines these characteristics.

C.2 Customer Data Analysis

The customer data analysis provides the basis by which costs can be allocated to effectively recover costs from the various customer classes. The analysis begins by performing a "price out" of the customer data provided by the City. The price out is used to calibrate the customer statistics used in the analysis, adjusting them so that they generate revenues that are consistent with actual reported revenues when the corresponding rate structure is applied to them.

For this analysis, the City provided summary-level records containing the number of accounts, water meter size, and assumed sewer flow for FY 2008/09 through FY 2010/11. However, given that the data was summary-level only and that there were concerns regarding the accuracy of the data, a supplementary analysis of detailed data from the City's third-party water purveyors was performed. Since the City does not provide water service to its customers, this data had to be obtained from local

water purveyors in order to verify the revenue the City collects. There are three water purveyors that provide water service to Chula Vista sewer customers - Otay Water District (Otay), Sweetwater Authority (Sweetwater), and California American Water (Cal Water).

The purpose of the supplementary analysis was to establish that revenues billed are reasonably consistent with adopted rates and charges, and to determine a breakdown of customer base, sewage volumes and related revenues that can be relied on to analyze potential changes to rate levels and structure. The exercise is not intended to validate the accuracy of every bill, although investigation of major discrepancies may offer such opportunities. The analysis successfully defined a representative customer base that provides a reliable basis for evaluating and testing sewer rate revisions and was used in the rate setting process. Appendix A provides further detail regarding the supplementary billing audit and its findings.

The FY 2010/11 customer data was used for calculating rates. Applying the FY 2010/11 rate structure to these statistics produced a rate revenue estimate of $28.0 million, compared to actual reported rate revenues of $28.1 million (a difference of $59,425 or roughly 0.21%). To prevent overestimating the City's customer base and maintain a conservative rate-setting process, the customer statistics were not adjusted based on this variance. After performing the price out, future-year customer counts, demands, and loadings were forecasted using the assumed customer growth and demand growth rates discussed in the O&M forecast.

A "combined growth factor" was used to forecast sewer flows and loadings while the development growth escalator was used to forecast customer accounts. The combined growth factor combines the demand growth and development growth escalators into a single forecasting metric. Annual demand and development growth for the five-year rate period is assumed to be -1.50% and 1.05%, respectively; combined, sewer flows are escalated using an annual rate of -0.47%. Assuming that conservation gains only impact customer flows and do not materially affect the overall loadings of COD and TSS (average COD/TSS concentrations increase due to conservation), estimated COD and TSS loadings are assumed to increase with development growth. Additionally, certain customer classes were forecast with no growth as they represent unique customers that will not be growing at the same rate as other customer classes. All high-volume users, variance accounts, and industrial customers are assumed to have zero account and flow growth.[22]

The forecasted customer statistics are used in the rate-setting process as well as the functional allocation. The units used to develop unit costs in **Exhibit 17** above are derived from the customer data analysis and forecast.

C.3 Rates

As noted, the sewer rates are developed using unit costs. These unit costs are calculated by dividing the allocated costs of each functional component by the related customer characteristic they are linked to providing service for. For example, the "flow" component of the functional allocation includes costs related to providing capacity and conveyance of sewage. As such, these allocated costs are divided by total estimated flow to develop a cost per unit of flow. These unit costs are displayed in **Exhibit 17** above, and are used for setting Sewer Service Charges but not the SFR Fee (which is developed in a separate process discussed below).

[22] High-volume and variance accounts are customers charged a unique rate by the City based on a yearly analysis of sewer discharges.

Sewer Service Charge

As previously noted, the City does not wish to adjust the current sewer rate structure as it meets legal requirements and industry standards while recovering costs equitably and efficiently. As such, the rate structure was updated to reflect the City's current operations and planning. **Exhibit 18** shows the updated forecast of Sewer Service Charges, excluding both Storm Drain Fees and SFR Fees.

Exhibit 18: Sewer Service Charge Forecast

Monthly Fixed Service Charge	FY 2013/14 Existing	FY 2014/15 Proposed	FY 2015/16 Proposed	FY 2016/17 Proposed	FY 2017/18 Proposed	FY 2018/19 Proposed
Single-Family	$8.03	**$8.25**	**$8.56**	**$8.90**	**$9.27**	**$9.43**
All Others:						
5/8" Meter	$8.03	**$8.25**	**$8.56**	**$8.90**	**$9.27**	**$9.43**
3/4" Meter	$8.03	**$8.25**	**$8.56**	**$8.90**	**$9.27**	**$9.43**
1" Meter	$13.38	**$13.78**	**$14.30**	**$14.86**	**$15.47**	**$15.74**
1-1/2" Meter	$26.76	**$23.00**	**$23.88**	**$24.81**	**$25.83**	**$26.27**
2" Meter	$42.81	**$34.07**	**$35.36**	**$36.73**	**$38.23**	**$38.88**
3" Meter	$80.28	**$63.59**	**$65.99**	**$68.55**	**$71.35**	**$72.55**
4" Meter	$133.79	**$96.79**	**$100.44**	**$104.34**	**$108.59**	**$110.41**
6" Meter	$267.59	**$189.03**	**$196.16**	**$203.76**	**$212.06**	**$215.61**
8" Meter	$428.14	**$373.50**	**$387.59**	**$402.60**	**$419.00**	**$426.00**

Volume Charge per Hundred Cubic Feet (hcf)	FY 2013/14 Existing	FY 2014/15 Proposed	FY 2015/16 Proposed	FY 2016/17 Proposed	FY 2017/18 Proposed	FY 2018/19 Proposed
Residential						
Single-Family	$3.39	**$3.72**	**$3.87**	**$4.02**	**$4.19**	**$4.26**
Multi-Family	$3.39	**$3.72**	**$3.87**	**$4.02**	**$4.19**	**$4.26**
Mobile Homes	$3.39	**$3.72**	**$3.87**	**$4.02**	**$4.19**	**$4.26**
Non-Residential						
Commercial – Low	$3.39	**$3.72**	**$3.87**	**$4.02**	**$4.19**	**$4.26**
Commercial – Med	$4.70	**$5.26**	**$5.46**	**$5.68**	**$5.92**	**$6.02**
Commercial – High	$7.31	**$8.40**	**$8.72**	**$9.06**	**$9.43**	**$9.59**
Special Users	Varies	**Varies**	**Varies**	**Varies**	**Varies**	**Varies**

Sewer Facilities Replacement Fee

The Sewer Facilities Replacement (SFR) Fee is designed to provide ongoing funding to maintain and replace the City's physical sewer system, based on the needs defined by the City's WAMP and summarized in **Exhibit 10**. By providing a recurring cash resource for capital projects, the City can better plan and fund capital projects. Because the current fee is a volumetric rate, annual variations in water consumption may negatively impact the amount of revenue collected. Consequently, the City wished to explore a shift in the SFR Fee structure from a volumetric charge to a fixed charge that would provide a more stable revenue source for future replacement funding needs.

To mitigate impacts to ratepayers, a phase-in approach was used that progressively shifts revenue collection away from the volumetric rate to a fixed rate, eventually reaching a fully fixed monthly rate by FY 2017/18.

The amount of replacement funding is calculated based on a percentage of annual depreciation expense. The City collected about $1.8 million in SFR Fees during FY 2012/13, which equates to roughly 30% of the sewer utility's depreciation expense ($6.2 million). In addition to shifting replacement funding to a fixed rate, the City also wishes to increase the level of replacement funding

provided by the SFR Fee structure. By doing so, the City will increase the resources available to fund future system rehabilitation and replacement. Currently, the City estimates annual WAMP costs to be roughly $3 million or roughly 163% of the replacement funding currently generated through the SFR Fee. This annual cost is expected to increase over time – assuming an annual construction cost inflation rate of 4%, the annual outlay for WAMP infrastructure replacement would increase to almost $3.8 million by FY 2020, and around $5.6 million by FY 2030.

The analysis assumes that the sewer utility's depreciation expense (the key benchmark for establishing annual replacement funding levels) increases by 3.0% annually to account for new assets being booked to the City's asset records and a portion of the older (less expensive) assets being replaced with new (more expensive) assets. This is also consistent with the City's own financial records that show sewer related depreciation increasing 2.25% from FY 2008/09 to FY 2009/10.[23] This analysis uses reported depreciation of $5.5 million in FY 2009/10 as the base year.

In FY 2013/14 the analysis assumes the City retains the existing SFR Fee of $0.18 per hcf, and will fund about 30% of total depreciation expense for a replacement funding level of $1.8 million. Beginning in FY 2014/15, the SFR Fee revenue target is allocated between a volumetric and fixed rate component. In FY 2014/15, 72% is allocated to the volumetric component with the remainder to the fixed rate. The volumetric revenue portion is divided by total forecasted sewer flows of 10.1 million hcf to generate a volumetric rate of $0.14 per hcf of sewer flow – this is a decrease of $0.04 compared to the current SFR Fee. Similarly, the fixed revenue portion is divided by total number of MEUs to generate a fixed charge of $0.73 per MEU. The MEU is used as the basis for the fixed charge as a representative measure of a customer's share of system capacity.

Over the five-year financial plan, the SFR Fee is shifted from being exclusively volumetric to being exclusively fixed. **Exhibit 19** summarizes the forecast of SFR Fees over the study period.

Exhibit 19: Sewer Facilities Replacement (SFR) Fee Forecast

Monthly Fixed Service Charge	FY 2013/14 Existing	FY 2014/15 Proposed	FY 2015/16 Proposed	FY 2016/17 Proposed	FY 2017/18 Proposed	FY 2018/19 Proposed
Single-Family	$0.00	**$0.73**	**$1.67**	**$2.72**	**$3.70**	**$5.10**
All Others:						
5/8" Meter	$0.00	**$0.73**	**$1.67**	**$2.72**	**$3.70**	**$5.10**
3/4" Meter	$0.00	**$0.73**	**$1.67**	**$2.72**	**$3.70**	**$5.10**
1" Meter	$0.00	**$1.82**	**$4.18**	**$6.80**	**$9.25**	**$12.75**
1-1/2" Meter	$0.00	**$3.64**	**$8.35**	**$13.60**	**$18.49**	**$25.50**
2" Meter	$0.00	**$5.82**	**$13.36**	**$21.76**	**$29.59**	**$40.80**
3" Meter	$0.00	**$11.64**	**$26.72**	**$43.52**	**$59.17**	**$81.60**
4" Meter	$0.00	**$18.19**	**$41.76**	**$68.00**	**$92.46**	**$127.50**
6" Meter	$0.00	**$36.37**	**$83.51**	**$136.00**	**$184.91**	**$255.00**
8" Meter	$0.00	**$72.74**	**$167.02**	**$272.01**	**$369.83**	**$510.01**

Volume Charge per Hundred Cubic Feet (hcf)	FY 2013/14 Existing	FY 2014/15 Proposed	FY 2015/16 Proposed	FY 2016/17 Proposed	FY 2017/18 Proposed	FY 2018/19 Proposed
All Customers	$0.18	**$0.14**	**$0.10**	**$0.05**	**$0.00**	**$0.00**

[23] Based on reported Sewer and Sewer DIF depreciation of $5.4 million and $5.5 million in FY 2008/09 and FY 2009/10, respectively. Source: 2009 & 2010 CAFRs.

Exhibit 20 summarizes the combined sewer rate structure, which includes both the Sewer Service Charge and the SFR Fee. Consistent with the other sections of this report, it excludes Storm Drain Fees.

Exhibit 20: Combined Sewer Rate Forecast

Monthly Fixed Service Charge	FY 2013/14 Existing	FY 2014/15 Proposed	FY 2015/16 Proposed	FY 2016/17 Proposed	FY 2017/18 Proposed	FY 2018/19 Proposed
Single-Family	$8.03	**$8.97**	**$10.23**	**$11.62**	**$12.97**	**$14.53**
All Others:						
5/8" Meter	$8.03	**$8.97**	**$10.23**	**$11.62**	**$12.97**	**$14.53**
3/4" Meter	$8.03	**$8.97**	**$10.23**	**$11.62**	**$12.97**	**$14.53**
1" Meter	$13.38	**$15.60**	**$18.48**	**$21.66**	**$24.72**	**$28.49**
1-1/2" Meter	$26.76	**$26.64**	**$32.23**	**$38.41**	**$44.32**	**$51.77**
2" Meter	$42.81	**$39.89**	**$48.72**	**$58.49**	**$67.82**	**$79.68**
3" Meter	$80.28	**$75.23**	**$92.71**	**$112.07**	**$130.52**	**$154.15**
4" Meter	$133.79	**$114.98**	**$142.20**	**$172.34**	**$201.05**	**$237.91**
6" Meter	$267.59	**$225.40**	**$279.67**	**$339.76**	**$396.97**	**$470.61**
8" Meter	$428.14	**$446.24**	**$554.61**	**$674.61**	**$788.83**	**$936.01**

Volume Charge per Hundred Cubic Feet (hcf)	FY 2013/14 Existing	FY 2014/15 Proposed	FY 2015/16 Proposed	FY 2016/17 Proposed	FY 2017/18 Proposed	FY 2018/19 Proposed
Residential						
Single-Family	$3.57	**$3.86**	**$3.97**	**$4.07**	**$4.19**	**$4.26**
Multi-Family	$3.57	**$3.86**	**$3.97**	**$4.07**	**$4.19**	**$4.26**
Mobile Homes	$3.57	**$3.86**	**$3.97**	**$4.07**	**$4.19**	**$4.26**
Non-Residential						
Commercial – Low	$3.57	**$3.86**	**$3.97**	**$4.07**	**$4.19**	**$4.26**
Commercial – Med	$4.88	**$5.40**	**$5.56**	**$5.73**	**$5.92**	**$6.02**
Commercial – High	$7.49	**$8.54**	**$8.82**	**$9.11**	**$9.43**	**$9.59**
Special Users	Varies	**Varies**	**Varies**	**Varies**	**Varies**	**Varies**

Exhibit 21 provides a forecast of average monthly bills for three hypothetical customers:

Exhibit 21: Sample Bill Calculations

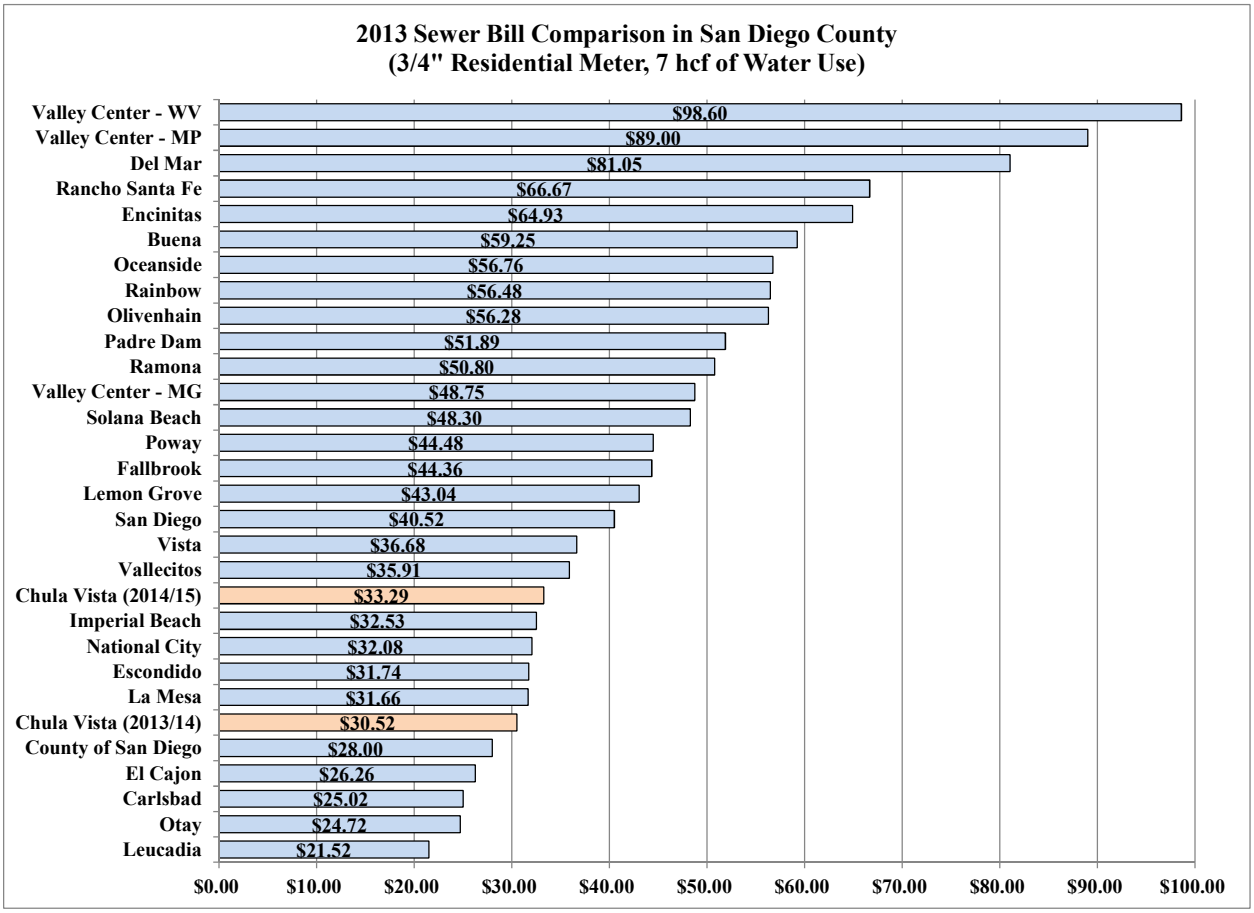
Average Monthly Bill	FY 2013/14 Existing	FY 2014/15 Proposed	FY 2015/16 Proposed	FY 2016/17 Proposed	FY 2017/18 Proposed	FY 2018/19 Proposed
Single-Family Residence @ 10 hcf						
Fixed Charge	***$8.03***	***$8.97***	***$10.23***	***$11.62***	***$12.97***	***$14.53***
Volume Charge:						
Total Usage [1]	10 hcf	10 hcf	10 hcf	10 hcf	10 hcf	10 hcf
× Rate of Return	90%	90%	90%	90%	90%	90%
Usage Subject to Volume Charge	9 hcf	9 hcf	9 hcf	9 hcf	9 hcf	9 hcf
Volume Rate	$3.57	$3.86	$3.97	$4.07	$4.19	$4.26
Volume Charge	***$32.13***	***$34.74***	***$35.73***	***$36.63***	***$37.71***	***$38.34***
Total Bill (Fixed Charge + Volume Charge)	***$40.16***	***$43.71***	***$45.96***	***$48.25***	***$50.68***	***$52.87***
1" Multi-Family @ 35 hcf						
Fixed Charge	***$13.38***	***$15.60***	***$18.48***	***$21.66***	***$24.72***	***$28.49***
Volume Charge:						
Total Usage	35 hcf	35 hcf	35 hcf	35 hcf	35 hcf	35 hcf
× Rate of Return	79%	79%	79%	79%	79%	79%
Usage Subject to Volume Charge	28 hcf	28 hcf	28 hcf	28 hcf	28 hcf	28 hcf
Volume Rate	$3.57	$3.86	$3.97	$4.07	$4.19	$4.26
Volume Charge	***$98.71***	***$106.73***	***$109.77***	***$112.54***	***$115.85***	***$117.79***
Total Bill (Fixed Charge + Volume Charge)	***$112.09***	***$122.33***	***$128.25***	***$134.20***	***$140.57***	***$146.28***
2" Medium-Strength Commercial @ 70 hcf						
Fixed Charge	***$42.81***	***$39.89***	***$48.72***	***$58.49***	***$67.82***	***$79.68***
Volume Charge:						
Total Usage	70 hcf	70 hcf	70 hcf	70 hcf	70 hcf	70 hcf
× Rate of Return	90%	90%	90%	90%	90%	90%
Usage Subject to Volume Charge	63 hcf	63 hcf	63 hcf	63 hcf	63 hcf	63 hcf
Volume Rate	$4.88	$5.40	$5.56	$5.73	$5.92	$6.02
Volume Charge	***$307.44***	***$340.20***	***$350.28***	***$360.99***	***$372.96***	***$379.26***
Total Bill (Fixed Charge + Volume Charge)	***$350.25***	***$380.09***	***$399.00***	***$419.48***	***$440.78***	***$458.94***

[1] For single-family customers, "total usage" is based on the lowest two-month average water usage from November - April; for other customers, it is based on actual water usage.

As shown in **Exhibit 1**, the rate of return (return-to-sewer factor) varies by customer class. **Exhibit 21** shows how usage is adjusted for the assumed rate of return prior to applying the volume rate.

Exhibit 22 provides a survey of single-family residential bills for a variety of local jurisdictions, prepared by Otay Water District.

Exhibit 22: Monthly Sewer Bill Comparison



Compared to other jurisdictions in San Diego County, single-family residences in Chula Vista pay a relatively moderate sewer bill for single-family residences. Even with the $2.77 increase resulting from the proposed FY 2014/15 rate structure shown in **Exhibit 20**, the monthly bill is expected to remain below the 50th percentile of single-family bills in San Diego County. Note that the bills shown for Chula Vista in **Exhibit 22** exclude the Storm Drain Fee.

SECTION V: CONCLUSION

Upon review of the City's current sewer rate structure and discussion with City staff, the current rate structure was left unchanged in regard to the overall structural components. Basing the variable charge for single-family residences off each previous year's lowest two-month average allows the City to best estimate sewer flows without individually metering all customers – furthermore, the estimated sewer flow is held constant throughout the year to reduce the City's exposure to monthly variations in water demands.

The SFR Fee currently provides roughly $1.8 million in cash resources for replacing aging infrastructure within the City's collection system – however, additional funding will be needed in order to meet expected increased funding needs from the WAMP. The amount of revenue collected through the SFR Fee is projected to increase by $2.2 million by FY 2018/19, corresponding to a total annual funding level of $4.0 million. Additionally, to decrease potential revenue volatility and assist the City in planning for capital projects, the SFR Fee is being converted into a fixed charge. This conversion is planned to take place from FY 2014/15 through FY 2018/19 in gradual increments, with the intention of mitigating financial impacts to customers. We recommend that the City consider implementing the SFR Fee phasing strategy shown in **Exhibit 19**.

In addition to planning for increased replacement needs, the financial plan assumes that Metro's 301(h) waiver will expire in FY 2014/15 and it will have to upgrade the Point Loma Wastewater Treatment Plant to full secondary treatment within 10 years of the waiver's expiration. With an expected cost of $1 billion, Chula Vista would be responsible for roughly $97 million of the upgrade cost.

To help meet this obligation, it is recommended that the City begin funding a dedicated reserve that will fund 20% or $20.2 million of the $97 million. By planning for the PLWTP upgrade, the City is actively guarding against large rate spikes for its ratepayers. Based on the recommended scenario, the City will fund the first $1.8-million transfer to the EPA Permit Renewal Liability Reserve by 2014/15 – if Metro's waiver is renewed in FY 2014/15, the City has the flexibility to either reduce future rate adjustments to reflect the avoided cost or transfer the funds to the SFR Reserve to apply toward future replacement needs.

The reserve funding is part of the recommended financial plan, which is outlined in **Exhibit 14**.

In addition to developing a financial plan for the City's sewer utility, this study analyzed existing rates and updated the City's cost allocation. The cost allocation is the basis for setting rates across the multiple customer classes and rate components.

The City's current rate structure is based on a cost allocation performed in 2007. The 2007 allocation assigned roughly 16% of the revenue requirement to the fixed charge component of the rate structure – this has since risen to 19% as consumption has dropped. The updated allocation remains consistent with the current trend, recovering 18% of the revenue requirement through fixed charges (by allocating customer and service costs to the fixed rate components). The remaining 82% of the revenue requirement was allocated to the variable rate components; that is, the Flow, COD, and TSS functional components of the system. A major operating cost allocated to Flow, COD, and TSS is the

payments made to Metro for treatment – as the City pays Metro based on the amount of sewer discharge sent for treatment, these payments are roughly 65% of the total FY 2013/14 revenue requirement.

The forecast of proposed rates based on the updated cost allocation is displayed in **Exhibit 20**. The City has the flexibility to adopt only the proposed 2014/15 rates, or the rates shown for the entire study period – in either case, the City should consider re-evaluating its rates once the outcome of the 301(h) waiver is known.

APPENDICES

A. SEWER BILLING MEMO

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From: FCS GROUP

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RE Customer Data Analysis and Billing Audit

STUDY OBJECTIVE

The City of Chula Vista (the City) provides sewer service to residential and commercial customers within the City limits. Customers are charged a fixed sewer fee, based on the customer's meter size, and a volumetric sewer charge based on the amount of water consumption over the billing period. Since the City does not provide water service to its customers, this data had to be obtained from local water purveyors in order to verify the revenue the City collects. There are three water purveyors that provide water service to Chula Vista sewer customers - Otay Water District (Otay), Sweetwater Authority (Sweetwater), and California American Water (Cal Water). The City's sewer revenue structure relies on the accuracy of utility billing, and the concurrent sewer rate study required a reasonable estimate and breakdown of sewer rate revenues in order to complete a cost-of-service allocation and establish cost-based rates.

The purpose of this study is to establish that revenues billed are reasonably consistent with adopted rates and charges, and to determine a breakdown of customer base, sewage volumes and related revenues that can be relied on to analyze potential changes to rate levels and structure. The exercise is not intended to validate the accuracy of every bill, although investigation of major discrepancies may offer such opportunities. Instead, a successful outcome of the study is to: 1) establish whether current sewer utility billings are consistent with established rates and charges and related customer demands; 2) identify and document any systemic discrepancies that may require further investigation and resolution; and 3) define a representative customer base that provides a reliable basis for evaluating and testing sewer rate revisions. This billing audit uses data provided by the water purveyors and the City of Chula Vista in order to verify the amount of revenues collected in fiscal year 2011 and detail a breakdown of how those revenues are generated relative to adopted rates and charges. This process and findings are discussed in greater detail below.

DATA OVERVIEW

In order to perform a billing audit, there are several data fields that must be present. Most importantly there needs to be a customer class identifier that distinguishes one customer class from another. For example, single family residences are subject to different charges as compared to high strength commercial accounts. Furthermore, this classification system must by synonymous with the City's billing structure. For example, while the water purveyor may provide a customer classification for its own billing purposes, this is of little value if it does not match the City's customer classification. This was an initial issue with both the Otay and Sweetwater data sets. Additionally, since the analysis requires matching water consumption from the purveyor's data to the City's customer base, there needs to be a unique identifier to relate the two data sets. The analysis used the Assessor Parcel Number (APN) to relate customer data from the water purveyor to the City's. Lastly, the data should include a billed amount generated from the entity responsible for billing. This is used to benchmark calculated billed amounts from the analysis to billed amounts recorded by the billing entity. All of these components, in addition to others, were used to perform the billing audit. It is important to note that the level of accuracy in the billing audit is highly dependent on obtaining these

key variables. The following bullet points highlight the water consumption data from the three water purveyors used to conduct the billing audit, and the relationship to the means of billing for sewer service.

- **Montgomery:** Customers (Southern Chula Vista) within the Montgomery service area are billed through a line item on their annual property tax bill.
- **Otay Water District:** Customers (Eastern Chula Vista) are billed monthly through the Otay Water District.
- **Sweetwater Authority:** Customers (Western Chula Vista) receive a bi-monthly bill from the City's Finance Department.

Montgomery

The City of Chula Vista provides sewer service to customers residing in the southern portion of the City. The users are classified as "Montgomery" accounts. Customers located in this region are billed on their annual property tax bill. The City maintains a database of these customers, which was provided in order to perform the billing audit. The primary focus for this customer subset was the accurate translation of water volumes from water purveyor records to City sewer billing accounts.

Process

The City of Chula Vista maintains the billing information for the accounts residing in the Montgomery service area. As previously mentioned, these customers are billed on their annual property tax bill. Additionally, these customers receive water service from either the Sweetwater Authority or Cal Water. Since the City's sewer rate structure charges customers based on flow, water consumption data provided by the Sweetwater Authority and Cal Water was used to calculate flows and associated billings for each customer. FCS Group worked closely with City staff, the Sweetwater Authority, and Cal Water to obtain the necessary data to complete the billing audit.

Limitations

While the City's billing records for Montgomery customers contain a water consumption field, the goal was to match water consumption from the water purveyor's databases (Sweetwater Authority and Cal Water) to the City's. In order to do this, a unique identifier must exist between the data sets in order to appropriately match consumption to the correct account. The APN number is the unique identifier that exists between both data fields and was used to relate flows from the Sweetwater Authority and Cal Water to the Montgomery accounts. However, through this process only 91% of the accounts were matched to either Sweetwater's or Cal Water's water consumption. Since the consumption field provided by the City had been determined to be reliable based on the matching accounts, the remaining 9% unmatched consumption was obtained by using the consumption provided by the City. Given that the matched consumption was in line with the City's consumption, this step does not materially affect the accuracy of the billing audit.

Otay

The Otay Water District provides water service to the majority of the City's sewer customers; these customers are located in the Eastern region of the City. Additionally, Otay directly bills all sewer customers within its service area and remits collected sewer revenues to the City – a service the City pays Otay to provide. The primary focus of review for Otay customers was resolving the linkage of water usage, billed sewer volume and appropriate City sewer charges.

Process

Otay provided water consumption data for fiscal years 2009 through 2011 (FY 2009 – FY 2011). The initial data set presented challenges which did not allow the data to be accurately audited. While the data provided descriptions used to identify different classes of customers, the descriptions did not provide a clear link to the City sewer rates. Specifically, the three commercial classes were indistinguishable from one other; therefore the correct volumetric rate could not be applied to any of the City's commercial customers. Additionally, the first data set did not provide recorded bill amounts which, if the data were able to be priced-out, did not allow the calculated revenues to be verified.

Based on these findings, FCS GROUP contacted Otay in order to gather the missing data points. FCS GROUP discussed the need for data points that would allow the correct volumetric sewer rate to be applied to each customer in addition to recorded bill amounts to verify calculated revenues. From this discussion Otay provided a second data set containing recorded bill amounts which, coupled with the consumption data provided in the first data set, could allow for the different customer classes to be identified by "back calculation": calculating the volumetric rate used to generate the total bill amount and matching this to the City's rates. This would be done by dividing the monthly bill amount (net of the monthly fixed charge based on meter size) for each customer by the corresponding assumed sewer flow. However, this identification method did not work adequately, as calculated volumetric rates varied widely and did not reflect any of the City's volumetric sewer charges. Further examination determined that the bill amounts within this data set represented comingled water and sewer charges causing the variance in the calculated volumetric rates.

FCS GROUP reviewed this issue with the City followed by a joint review with Otay. The reviews concentrated on further outlining and defining the need to gather the missing data in addition to providing suggestions of what variable or variables could be used to complete the billing audit, specifically a customer class identifier and sewer bill amount. In the third attempt to gather the data, Otay provided an additional data set containing three additional variables allowing the data to be priced-out. A fee code, a fee code description, and the monthly sewer bill amount were listed for each customer. These variables allowed the correct volumetric rate to be applied to each customer. The monthly sewer bill amount allowed the calculated revenue amounts to be verified, an integral component of any customer data analysis.

Limitations

The data collection process proved to be the most onerous and time-consuming task in the billing audit. The need to match data from two separate databases and incrementally work toward a complete data set may act as a disincentive for future billing audits or related customer data analyses. At the same time, it is also indicative of a potential risk related to accurate billing, which argues for periodic monitoring or review, perhaps by review of random samples. In this study, all required and correct data fields were ultimately obtained and the data provided the required information for the billing audit to be completed.

Sweetwater

The Sweetwater data set is comprised of customer accounts located in the Western part of the City. While these customers receive water service from Sweetwater, the sewer billing for these accounts is maintained by the department of finance within the City. The Sweetwater customers are billed on a bi-monthly basis. As with Montgomery, the primary focus of review for Sweetwater was reconciling water volumes contained in Sweetwater accounts with billed sewer volumes in City accounts.

Process

The City of Chula Vista maintains billing records and consumption data for customers located in Western Chula Vista. These customers receive water service from the Sweetwater Authority and the sewer service bill is charged on a bi-monthly basis. The City maintains a record of accounts, water consumption, customer class, and meter size – which are used to calculate the sewer bill. Since the water consumption from Sweetwater matched the consumption provided by the City in the Montgomery data set, the consumption number provided by the City was used. This decision was re-visited at the end of our results to determine if there was any material difference in billed amounts versus calculated bills. Given that the difference between total billed amounts and calculated billed amounts was extremely small, it can be determined that the City is correctly accounting for water consumption for customers located in Western Chula Vista served by Sweetwater Authority.

Limitations

Since the City directly obtains the billable consumption and generates a billable amount, it is very easy to audit this data. The volumetric sewer rates can be applied to the City's record of billable consumption and appropriate meter charges can be applied. This calculated amount is benchmarked against the City's record of billed amounts to determine if there is a substantial disparity between the two amounts.

STUDY FINDINGS

The study findings presented below are the results of analyzing each of the three separate customer data files – Montgomery, Sweetwater, and Otay. Each of these data files were evaluated and analyzed on an individual basis. This was done in order to isolate data discrepancies to each respective data set. Once these individual data sources were evaluated on a stand-alone basis, the analysis combined the results to form an aggregate level of comparison. This aggregate level was compared to the summary level data we received from the City at the beginning of the rate study.

Montgomery

The Montgomery service area consists of customers that receive water service from the Sweetwater Authority and Cal Water. They represent less than 10% of the City's sewer customer base. The "New Data" column shown below represents the findings obtained from the detailed billing file received from the City, while the "Original Data" column represents summary level data previously provided by the City. As you can see from the comparison below, the number of customer accounts from the new data set is very close to the number of accounts from the summary level data (original data column). Some variation is always expected in such a comparison for a variety of reasons, including new accounts, account closures, partial period billings, volume adjustments or corrections, billing cycles and time period used for each data run, and other factors. Given these results, it can be reasonably concluded that the City is correctly accounting for the number of accounts located within the City's southern region.

Exhibit 1: Montgomery Customer Account Comparison

Accounts:	New Data	Orig Data
Single Family	2,715	2,777
Multi-Family	372	371
Commercial - Low	354	356
Commercial - Med	44	44
Commercial - High	37	37

In addition to the number of accounts, the level of billable consumption derived from analyzing the "New Data" was compared to the "Original Data". It is important to note that billable consumption represents consumption after it is adjusted for rate of return (ROR) factor and consumption limits on residential customers[24]. As demonstrated in the table below, there is not a significant difference between the two data sets, indicating that the City is correctly tracking consumption for the Montgomery accounts. It is also important to note that the consumption figures in the table below contain the usage for 100% of the customer base. As discussed earlier, 91% of the customer accounts were matched to consumption data provided by Sweetwater or Cal Water. The consumption for the remaining 9% of unmatched accounts was obtained from the City's record of billable consumption.

Exhibit 2: Montgomery Flow Comparison

Billable Flow(hcf)	New Data	Orig Data
Single Family	218,707	227,104
Multi-Family	362,477	379,611
Commercial - Low	129,068	127,432
Commercial - Med	24,024	24,816
Commercial - High	21,844	28,811

Otay

As noted above, the Otay analysis required the combination of data sets from the Otay's billing and consumption databases. Monthly water consumption values were matched to each customer based on the unique APN. Following the initial price-out of the Otay, Montgomery, and Sweetwater data it was discovered there was a large discrepancy between reported calculated revenues. The Montgomery and Sweetwater bill records were assumed to be accurate because they were collected directly from the City while the Otay data did not pass through the City billing and receipting systems. To identify the cause of the revenue discrepancy, the detailed records provided for the billing audit were compared against summary level data initially provided for the rate analysis. Total accounts and water consumption statistics were compared with those findings summarize below.

[24] The ROR factor for Multi-family consumption is 79%. Single-family and all commercial classes have a ROR factor of 90%. SFR consumption is capped at 20 ccf per billing period.

Exhibit 3: Otay Customer Account Comparison

Accounts	New Data	Orig Data
SFD	22,432	29,349
MFD	382	520
CL	240	316
CM	43	48
CH	36	46

The above table illustrates that the data provided by Otay is missing a substantial amount of customers that are currently within its service area. While the above table identifies roughly 7,150 missing accounts, it is also important to compare reported flows under the new (billing audit) and original data (rate study). The table below contains the comparison of reported sewer flows for customers within Otay's service area.

Exhibit 4: Otay Customer Flow Comparison

Usage	New Data	Orig Data
SFD	1,788,800	2,695,669
MFD	451,037	662,444
CL	155,118	210,470
CM	68,753	69,577
CH	50,091	49,205

The table above confirms that the data sets obtained from Otay for the purpose of conducting a billing audit are missing roughly 24% of the total accounts and 32% of sewer flows within its service area. The analysis is taken one step further by identifying the corresponding difference in revenue due to the large discrepancy of customer statistics. The table below outlines the findings of this analysis.

Exhibit 5: Otay Revenue Difference

					Fixed Revenues		
Accounts	**New Data**	**Orig Data**	**Difference**	**Missing Revenue**	**Sewer**	**SFR**	**Storm**
SFD	22,432	29,349	-6,917	$ (724,590)	$ *(598,877)*	$ -	$ *(52,206)*
MFD	382	520	-138	(85,198)	*(85,198)*	-	-
CL	240	316	-76	(22,799)	*(22,799)*	-	-
CM	43	48	-5	(2,119)	*(2,119)*	-	-
CH	36	46	-10	(2,344)	*(2,344)*	-	-
Total	**23,134**	**30,279**	**-7,145**	**$ (837,050)**	***$ (711,337)***	***$ -***	***$ (52,206)***

					Volumetric Revenues		
Usage	**New Data**	**Orig Data**	**Difference**	**Missing Revenue**	**Sewer**	**SFR**	**Storm**
SFD	1,788,800	2,695,669	-906,869	$ (3,237,522)	$ *(3,074,286)*	$ *(163,236)*	$ -
MFD	451,037	662,444	-211,407	(767,407)	*(716,670)*	*(38,053)*	*(12,684)*
CL	155,118	210,470	-55,352	(200,928)	*(187,643)*	*(9,963)*	*(3,321)*
CM	68,753	69,577	-824	(4,071)	*(3,873)*	*(148)*	*(49)*
CH	50,091	49,205	886	6,689	*6,477*	*159*	*53*
Total	**2,513,799**	**3,687,365**	**-1,173,566**	**$ (4,203,239)**	***$ (3,975,995)***	***$ (211,242)***	***$ (16,002)***

								Total
				Total Revenue from Missing Data	***$ (4,687,332)***	***$ (211,242)***	***$ (68,208)***	***$ (4,966,782)***

As illustrated in the above table, there is roughly $5.0 million in unverifiable revenue directly related to the missing data in the Otay service area. It is important to note that this is revenue that is both reported and received by the City, and does not result in an inappropriate shortfall. Instead, it indicates that the data record remains incomplete and that a data set consistent with the full sewer customer base was not obtained. The $5.0 million is roughly equivalent to the total unaccounted for revenue identified when comparing calculated revenues from the three service areas (Montgomery,

Otay, and Sweetwater). This finding is discussed further in the Combined Reconciliation section below.

Sweetwater

The City of Chula Vista provides sewer service to residents located on the western portion of the City. These residents also receive water service from the Sweetwater Authority. In addition, these customers are charged on a bi-monthly basis. The City maintains a comprehensive database of sewer accounts that receive water service from the Sweetwater Authority and receives the level of water consumption directly from the water purveyor. Based on this information, we proceeded with analyzing the City's database. The following table compares the count of accounts from the City's sewer database (New Data) versus the summary level data we received at the onset of the study (Original Data). Since the difference between the accounts in the new data and the original data are not substantial, it can be concluded that the City is accurately accounting for the number of accounts served by the Sweetwater Authority.

Exhibit 6: Sweetwater Customer Account Comparison

Accounts:	New Data	Orig Data
Single Family	12,492 [1]	12,052
Multi-Family	1,287	1,286
Commercial - Low	600	589
Commercial - Med	157	148
Commercial - High	108	118

[1] Inclusive of accounts matching Montgomery file

The exhibit below characterizes the difference between the City's flows, obtained from the City's comprehensive database (new data) for each respective customer class, against the original summary level data we received. As demonstrated by the small differences between the two data sources, it can be determined that the City is maintaining an accurate account of flows for customers receiving water service from the Sweetwater Authority.

Exhibit 7: Sweetwater Flow Comparison

Billable Flow(hcf)	New Data	Orig Data
Single Family	960,307	962,507
Multi-Family	722,362	839,255
Commercial - Low	213,035	205,164
Commercial - Med	107,756	101,272
Commercial - High	66,975	62,257

COMBINED RECONCILIATION

Consistency of Data Records with Calculated Revenues

This first reconciliation is structured to test whether the customer records generate revenues consistent with expectations from rates and findings. It does not address consistency of calculated revenues with total reported revenues.

To test the accuracy of the billing data, total calculated billed amounts are compared to the billed amounts provided by the billing entity. The following table summarizes the calculated revenue in the first column and the total billed revenue in the second column. This comparison suggests that the methodology used in the price-out is correct given the small difference between calculated revenue and billed revenue.

Exhibit 8: Billing Audit Summary

Service Area	Total Calculated	Billing Records Total	Diff ($)	Diff (%)
Montgomery	$ 3,280,333	$ 3,215,404	$ 64,929	2.0%
Otay	12,417,241	12,740,270	(323,029)	-2.5%
Sweetwater	9,978,601	9,958,502	20,098	0.2%
Total	**$ 25,676,175**	**$ 25,914,176**	**$ (238,001)**	**-0.9%**

In addition to total revenues, the billing audit takes a closer look at the revenue collected from each of the City's various fee components. This revenue breakout for each service area is summarized in the table below. The relative proportion of revenues generated by each fee component is provided below the table. The proportion of revenues is compared against revenues for each fee components as stated in the City's accounting records. The comparison suggests that there are minor differences between the City's accounting of revenue from fee components and the results of the billing audit.

Exhibit 9: Revenue Source Summary

Service Area	Storm Fees	SFR Fees	Sewer Fees	Total Calculated
Montgomery	$ 55,356	$ 134,285	$ 3,090,692	$ 3,280,333
Otay	224,932	481,976	11,710,333	12,417,241
Sweetwater	177,523	390,335	9,410,743	9,978,601
Total	**$ 457,810**	**$ 1,006,596**	**$ 24,211,769**	**$ 25,676,175**
% of Calculated Revenue	*1.8%*	*3.9%*	*94.3%*	
Reported % of Adjusted Revenue [1]	*1.7%*	*3.9%*	*94.4%*	
Reported % of Un-Adjusted Revenue [2]	*1.8%*	*5.7%*	*92.5%*	

[1] Split between revenues was adjusted based on calculated differences from original price-out
[2] Un-adjusted revenues reference end-of-year revenue reports from City's finance team

Completeness and Accuracy of Data Sets

This reconciliation tests whether the data sets fully and accurately explain total sewer revenues. Calculated revenues from the billing data sets were compared against total revenues as reported in the City's accounting records. As noted above, there was a large discrepancy between calculated revenues and revenues reported in the City's accounting records. Upon closer examination, the discrepancy was predominantly caused by Otay providing incomplete data. The missing data accounted for roughly $5.0 million in sewer utility revenue. By applying the calculated revenue gap to the total calculated revenue from the billing audit, calculated revenues from available data closely match the City's accounting records. This suggests that the previously provided summary level data

was accurate and while incomplete, the data provided for the billing audit is also accurate. The table below summarizes these findings.

Exhibit 10: Consolidated Billing Audit Summary

Service Area	Revenue
Montgomery	$ 3,280,333
Otay	12,417,241
Sweetwater	9,978,601
Total Calculated Revenue	$ 25,676,175
Adjustment for Missing Otay Data	4,966,782
Adjusted Total Calculated Revenue	**$ 30,642,957**
Total Reported Revenue	$ 30,287,167
Difference ($)	***$ 355,790***
Difference (%)	***1.2%***

This step involves generating a representative customer base in terms of customer classes, number of accounts, and billed volumes that are consistent with the reported and confirmed sewer revenues. The resulting customer base then provides a basis for forecasting revenues and most importantly for evaluating sewer cost-of-service and creating cost-based sewer rates. While the missing Otay data requires a pro rata generation of representative accounts, in aggregate a customer base is defined that can be used with reasonable confidence for those exercises.

The following tables summarize the City's sewer customer base as reconciled to reported revenues. The customer base consists of the number of accounts and the total billable consumption by each customer class.

Exhibit 11: Customer Account Base

Customer Type	Montgomery	Otay [1]	Sweetwater
Single-Family	2,715	29,349	12,492
Multi-Family	372	520	1,287
Commercial - Low	354	316	600
Commercial - Med	44	48	157
Commercial - High	37	46	108
Total	**3,522**	**30,279**	**14,644**

Exhibit 12: Billable Water Consumption Base (ccf)

Customer Type	Montgomery	Otay [1]	Sweetwater
Single-Family	218,707	2,695,669	960,307
Multi-Family	362,477	662,444	722,362
Commercial - Low	129,068	210,470	213,035
Commercial - Med	24,024	69,577	107,756
Commercial - High	21,844	49,205	66,975
Total	**756,120**	**3,687,365**	**2,070,435**

Exhibit 13: Calculated Revenue and Comparison

Service Area	Storm Fees	SFR Fees	Sewer Fees	Total Calculated
Montgomery	$ 55,356	$ 134,285	$ 3,090,692	$ 3,280,333
Otay [1]	293,139	693,218	16,397,666	17,384,024
Sweetwater	177,523	390,335	9,410,743	9,978,601
Total	**$ 526,018**	**$ 1,217,838**	**$ 28,899,102**	**$ 30,642,957**
Accounting Records	*$ 528,404*	*$ 1,171,277*	*$ 28,587,486*	*$ 30,287,167*
Difference ($)	*(2,386)*	*46,561*	*311,615*	*355,790*
Difference (%)	*-0.5%*	*4.0%*	*1.1%*	*1.2%*

CONCLUSION

The goal of the billing audit is to establish a customer base that can be used for rate planning. In addition to establishing this customer base, the billing audit also analyzed the amount of revenue collected from each of the City's fee components (sewer facility replacement fee, storm drainage fee, and sewer fees). The results of this analysis, presented in the table above, suggest that the City may be shifting revenues between the different revenue sources since there is not an insignificant difference between calculated revenue and reported revenue by different fees. However, on an aggregate level, it is important to note that revenues generated from the billing audit closely match the reported accounting revenue for fiscal year 2011. This result suggests that the customer base established in the tables above provide a reasonable estimate for rate setting purposes and developing cost-of-service based rates.

The data sets were summarized and structured to match the City's rate structure. The number of accounts are grouped by meter size and consumption values by customer class. The City's rates were reapplied to the summarized statistics to calibrate the data to reported revenues. Using the summarizing data and calibrating to reported revenues, **Exhibit 14** below provides the proposed customer data set that conforms to reported revenues and the results of the billing system audit.[25] As intended by this effort, this data set can be relied on for cost allocation and rate design uses within the separate sewer cost-of-service rate study.

[25] See Appendix A.1 for further detail regarding the calibration of the summarized customer statistics.

Exhibit 14: Customer Statistics for Rate Setting

Meter Size	Accounts	Account Type	Usage (HCF)
SFD [1]	44,892	Single-Family	3,894,837
0.625	1,523	Multi-Family	1,824,684
0.75	74	Commercial - Low	552,521
1	1,009	Commercial - Med	201,338
1.5	631	Commercial - High	139,783
2	723		
3	27		
4	34		
6	9		
8	0		
10	0		
Total	**48,922**	**Total**	**6,613,164**

Fixed Fees			Volumetric Fees		
Meter Fee	$	5,326,278	Sewer Service	$	23,230,327
Storm Drain		377,092	SFR		1,190,369
			Storm Drain		163,100
Total	**$**	**5,703,371**	**Total**	**$**	**24,583,796**

[1] Includes 321 Low Income Residential Accounts

Upon City direction, we are now prepared to revise the sewer rate study by introducing this data set as the basis for cost allocation and rate design. This final update can be completed within the current rate study budget by redirecting budget initially scoped for public process. The City can then separately determine, as a part of its revised schedule for rate implementation, how best to utilize the study and our team for the review and adoption process. Assuming that remaining budget is dedicated to this update, an appropriate consultant role in a new, extended public review and adoption process can be established via a supplemental scope of work, which could address preparation and presentation of summary materials, further updates as new budgets or capital plans are produced, or other support activities desired by the City.